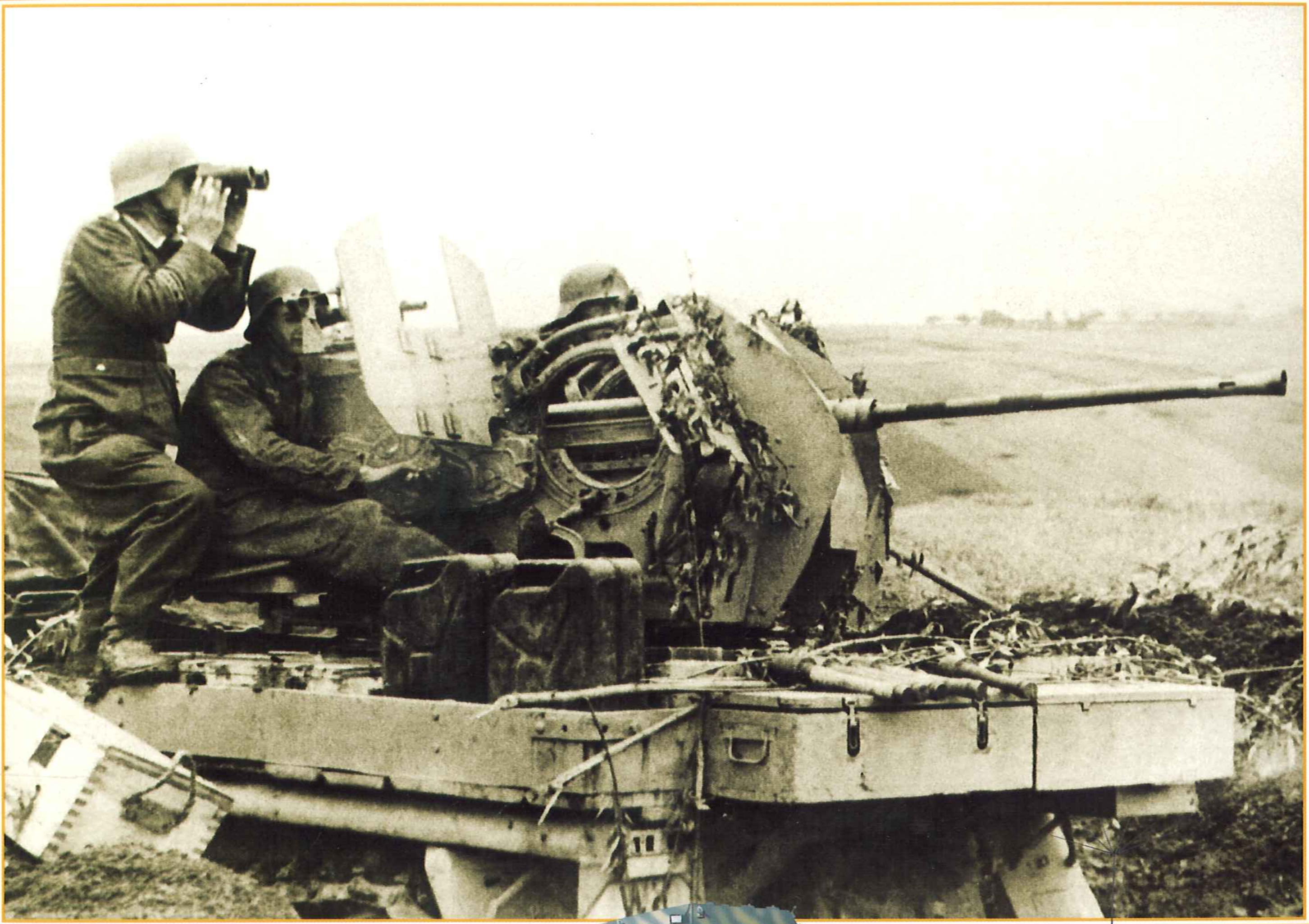
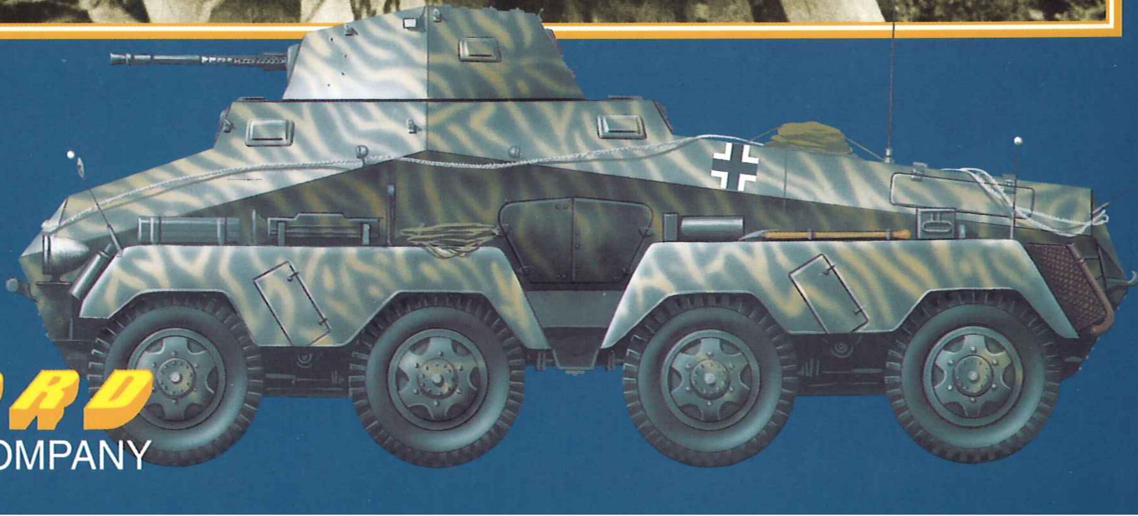
ARMOR AT WAR SERIES

7024

# WEHRMACHT SUPPORT VEHICLES

Robert Michulec





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# WEHRMACHT SUPPORT VEHICLES

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# Introduction

With the end of WWI, the military services of the nations involved, set out to study and evaluate their combat experiences. One conclusion, above all, was evident - that mechanization would play an important role in any future conflicts. Frontline troops would utilize specialized vehicles to transport them into combat, arm them and keep them supplied. The main offensive weapon of the future would be the tank. Indeed, the concept of tank warfare was of such importance, that Germany was prohibited from developing her own armored force by the Treaty of Versailles.

The tank had captured the imagination of military men the world over. In the post war years, the doctrine of mechanized warfare was being slowly created and tested in exercises by the victors. Germany was forced to patiently sit back and wait, all the while studying the methods being developed by the other nations, primarily, Great Britain.

There were two different philosophies on the employment of AFVs in combat. The first stemmed directly from the experiences of WWI, when tanks were used to storm enemy positions in support of the infantry. In this form, the tanks were subordinated to the infantry and provided the means by which the enemy position could be assaulted and occupied with a minimal number of casualties. The other philosophy dictated that tanks play the primary role, with all other weapons being subordinated to the armored force. The faster and more maneuverable tanks would be used in decisive assaults to break through at the point of least resistance and rampage through the enemy rear echelons, disrupting communications and supplies and demoralizing their troops, while motorized infantry protected the tanks and consolidated the territorial gains. This was the doctrine to which Major Heinz Guderian and other tank enthusiasts in the German Army subscribed.

In 1933, the new German Chancellor, Adolf Hitler saw a combined arms demonstration with motorcycles, anti-tank guns, tanks and armored cars and exclaimed that this was what he needed for his new Reich. At that point, the future of the Panzertruppe was assured.

The first Panzer battalion, equipped with Pz.Kpfw.I, was formed in 1934 and by late 1935, the first three Panzer divisions had been formed. At first they appeared as very simple formations. A Panzer division was organized with one brigade of two tank regiments. It was supported by an infantry brigade with an infantry regiment of two battalions, a motorcycle battalion, anti-tank abteilung, artillery regiment, reconnaissance and signals abteilungs and an engineer company. At least on paper they existed, for in 1935 only a small number of Pz.Kpfw.IIs were available and the first Pz.Kpfw.IIIs and IVs has not yet left the factories. It was the core of tanks and armored cars that gave the Panzer divisions their names. The towed artillery and motorized infantry including the motorcycle reconnaissance units were not armored and were only later equipped with tracked or half-track vehicles in some cases. As late as 1938, there were no organized supply units or mobile workshop companies and the divisions had to rely on depots or improvised civilian transport. But this would eventually change, as development of these specialized vehicles had begun much earlier.

In 1927/28, the German General Staff introduced the Kraftfahrrustungsprogramm (motorization program) in which they set out the standard specifications and requirements for military transport. In 1929 the program was finalized and when Hitler came to power in 1933, new efforts were made to turn German industry toward military requirements. A new system was initiated for specially designed military vehicles using Sd.Kfz. (Sonderkraftfahrzeug) numbers that described the use of the vehicle regardless of the make or model. For example a Krupp Protz used as a personnel carrier was classified as Kfz.70. The same vehicle used to tow an anti-tank gun was a Kfz.69 and when towing an anti-aircraft gun, a Kfz.81.

Between the wars, German industry produced a vast array of commercial vehicles and motorcycles. Long before the war, the Wehrmacht had recognized the need to produce a few standardized vehicles and under General-Major von Schell, a program to limit the types of vehicles was introduced. The specially designed Pkw. light standard car would be replaced by the two and four wheel drive Volkswagen. The medium and heavy Einheits (standard) Pkw.s would be replaced by vehicles using the 1.5 ton, 3 ton and 4.5 ton chassis with two wheel drive for commercial and four wheel drive for Wehrmacht use.

Half-track tractors, designs for which had begun in 1926, were also covered under the Schell Program. Eight models would be kept in production including the Kettenkraftrad and two Maultiers. Of these, the Sd.Kfz.10 would provide the basis for development of the Sd.Kfz.250 series of armored half-tracks just as the Sd.Kfz.11 would lead to the development of the Sd.Kfz.251. Unfortunately, the war began too soon for the program to be completely implemented and only the VW Kübelwagen and Mercedes-Benz and Steyr type 1500 series heavy personnel carriers entered mass production. Of course, there were many changes and variations introduced during the war years.

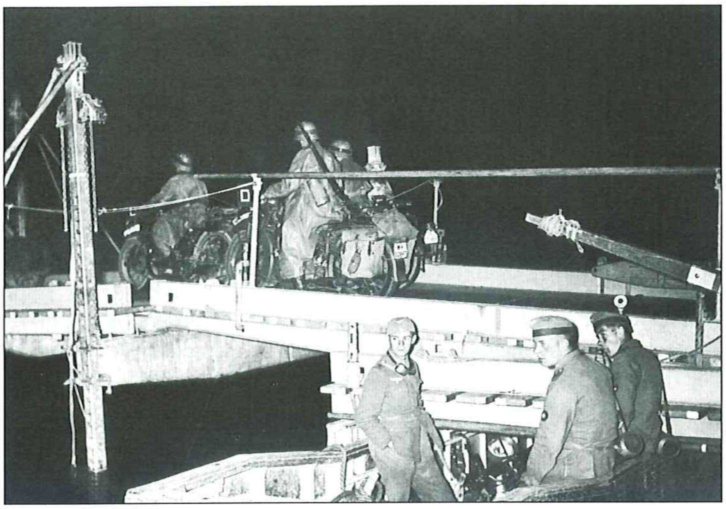
The German Army also made extensive use of captured enemy vehicles, as did the Allied and Soviet armies to a lesser extent. They also used foreign built vehicles manufactured in countries that were in their sphere of influence or under their direct control, like Saurer and Steyr in Austria and Praga, Tatra and Skoda in Czechoslovakia. During the years 1939 to 1944, Peugeot manufactured 48,813 trucks from 1.2 ton to 6 ton, 90% of which were used by Germany. Renault also supplied trucks to the German Army as well.

In 1942, the German Army realized the need for a series of fast and slow moving semi-tracked transport trucks and tractors. The new vehicles were designated Wehrmacht Schleppers (army tractors) and were to be of simpler design than existing half-tracks. Two models were planned, the leichter Wehrmacht Schlepper (le.WS) and the schwerer Wehrmacht Schlepper (s.WS). Only the s.WS went into production and some 1,300 were built. Also developed in 1942 was the Raupenschlepper Ost (RSO), which was a fully tracked tractor originally designed as a towing vehicle for the Eastern Front.

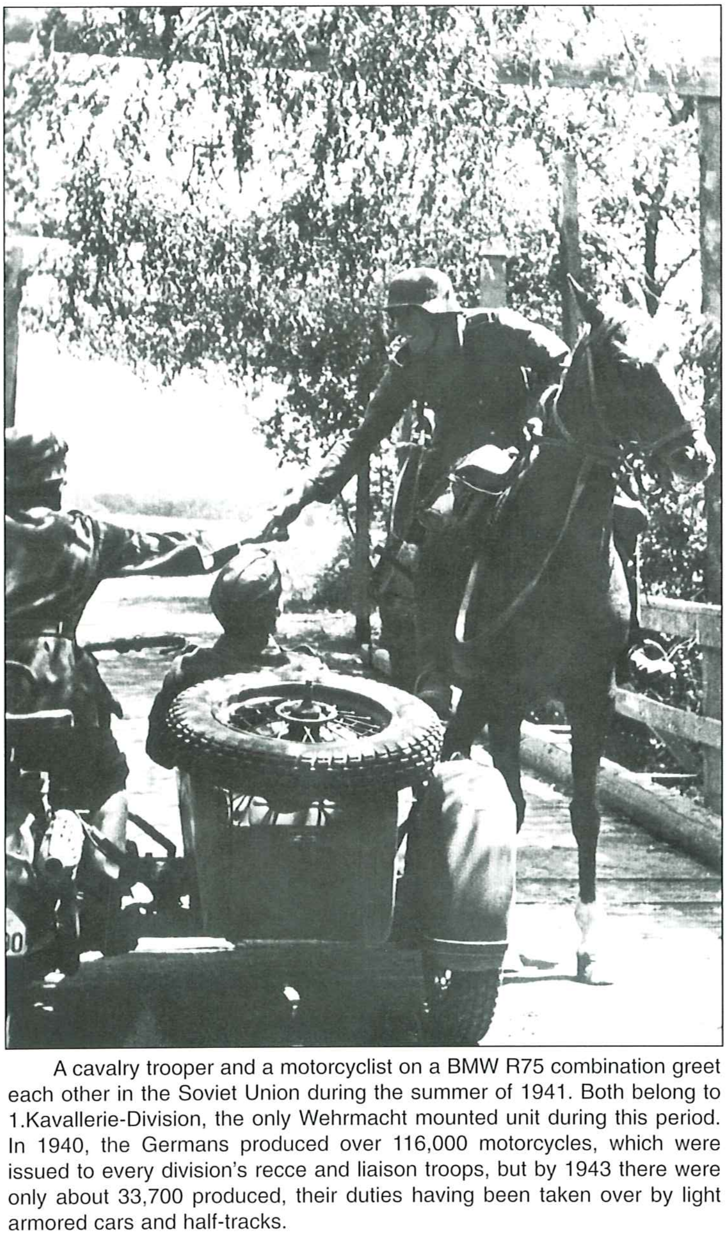
During the course of the war, and even with the end in sight, the German Army produced a bewildering array of self propelled weapons mounted on virtually anything that moved, from 2cm anti-aircraft guns mounted on Horch and Krupp Protz cross country cars to 8.8cm anti-aircraft guns mounted on Sd.Kfz.9 half-tracks, and 3.7cm to 7.5cm anti-tank guns mounted on various half-tracked and fully tracked transports.

In the early days of WWII, the German Wehrmacht was the most invincible war machine the world had ever seen. While the accomplishments of the Panzers earned the admiration and respect of the world, much of that success can be attributed to the support vehicles, without which, would have been impossible.

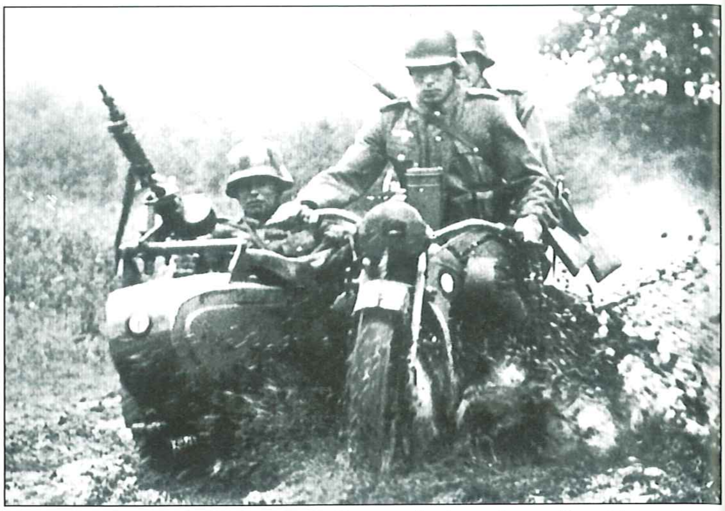
*All of the photographs published in this book are taken from the Military Institute of History, Central Military Archive, Military Photo Agency and Central Archive as well as private collections. I would like to thank everyone who supported me in my work on this book.*



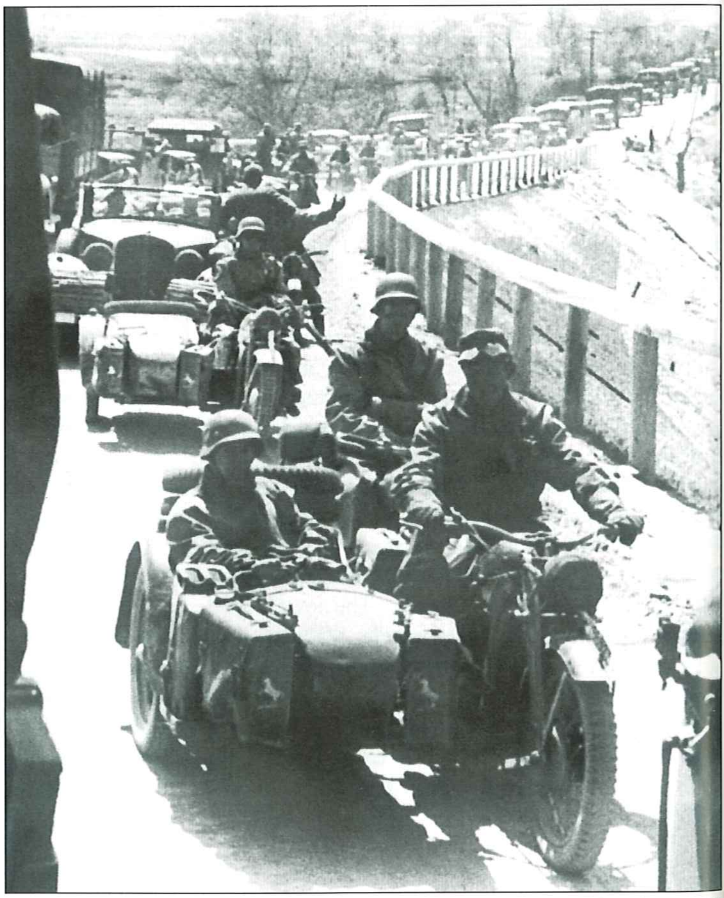
A motorcycle reconnaissance troop on night maneuvers crosses a pontoon bridge over a river. The motorcycle in the foreground is a BMW R4 while the one to the left appears to be an NSU. The soldiers wear color bands over their helmets and field caps which were used to identify forces - "friendly" troops usually had red bands while "enemy" forces carried blue ones. Note the different shapes of the license plates seen on the rear of the motorcycles, which was not uncommon.



A cavalry trooper and a motorcyclist on a BMW R75 combination greet each other in the Soviet Union during the summer of 1941. Both belong to 1.Kavallerie-Division, the only Wehrmacht mounted unit during this period. In 1940, the Germans produced over 116,000 motorcycles, which were issued to every division's recce and liaison troops, but by 1943 there were only about 33,700 produced, their duties having been taken over by light armored cars and half-tracks.

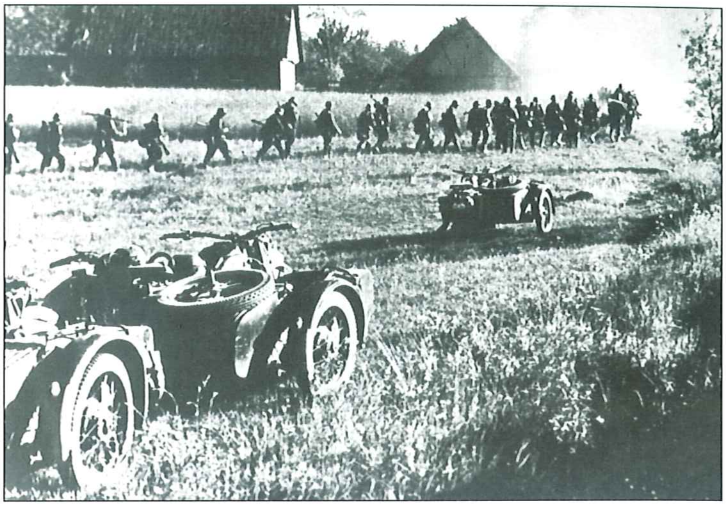


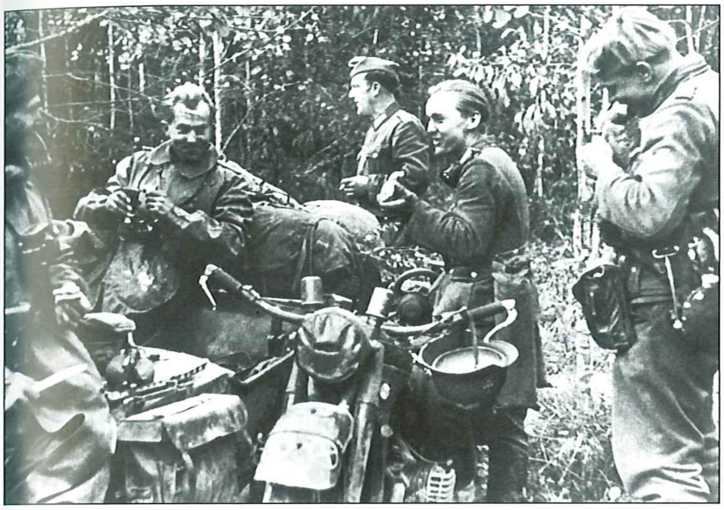
In times of Hitler's Panzerwaffe, any fast moving unit or higher level formation required continuous information on enemy activity in their line of advance. Reconnaissance duties, especially the most difficult, could be best accomplished only by very small units which could move swiftly and freely along roads or across fields. Such ubiquitous recce units of those past days had to be based on the use of the motorcycle, because it was the only type of vehicle which could be successfully utilized in this role. Today, a completely obsolete type of vehicle on the modern battlefield, in the 1940s, motorcycles were simply indispensable. The photo shows an early Zundapp combination which carries an unusual marking composed of a white circle with a black outline and vertical bar, probably red in color, painted on the frame of the motorcycle and front of the sidecar. Note the early M1916 helmet on the soldier in the sidecar.



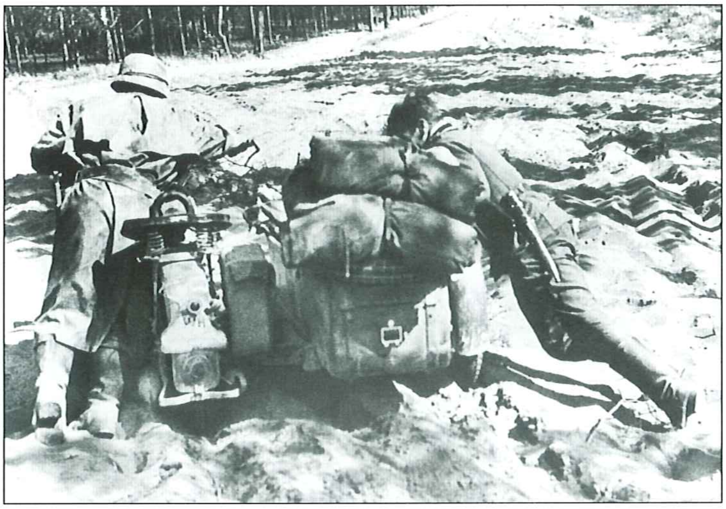
Summer 1941 - motorized columns of cars and trucks and a platoon of motorcycles belonging to 1.Kavallerie-Division march across Belorussia towards Moscow during "Operation Barbarossa". The motorcycle nearest the camera is a Zundapp KS600 heavily loaded with dispatch bags, two spare wheels fixed to the rear of the sidecar and even a petrol can. Of special interest is the divisional emblem showing a jumping horse painted on the front of both bags. These motorcycle combinations lack the MG34 mount on the sidecar because they were installed only on support motorcycles or in MG platoons.

Motorcycles were used not only in reconnaissance battalions, but also in large quantities in motorcycle infantry battalions that were organized within a few motorized infantry brigades of the Panzer divisions. Each battalion was composed of 2-3 companies, of which, one was designated as a motorcycle MG company. The company was divided into three platoons of thirteen motorcycles each plus an additional fourteen in the HQ section. In the motorcycle MG company, there were thirty seven motorcycles bringing the total number of machines in the battalion to 129. The motorcycles on the left are Zundapp KS600 combinations.

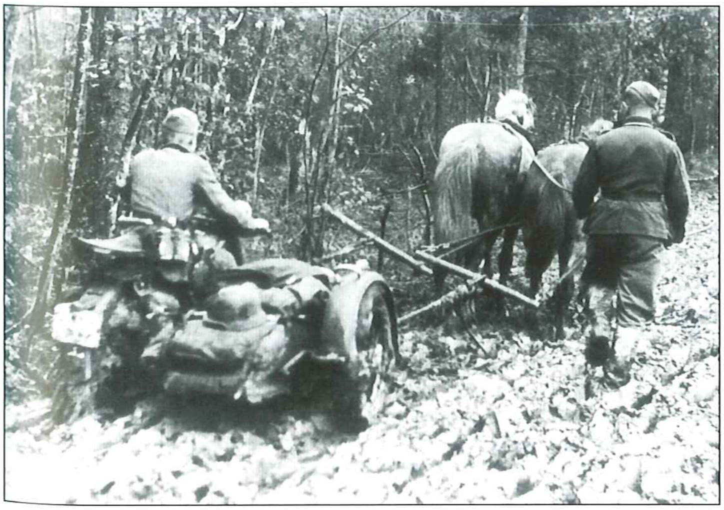




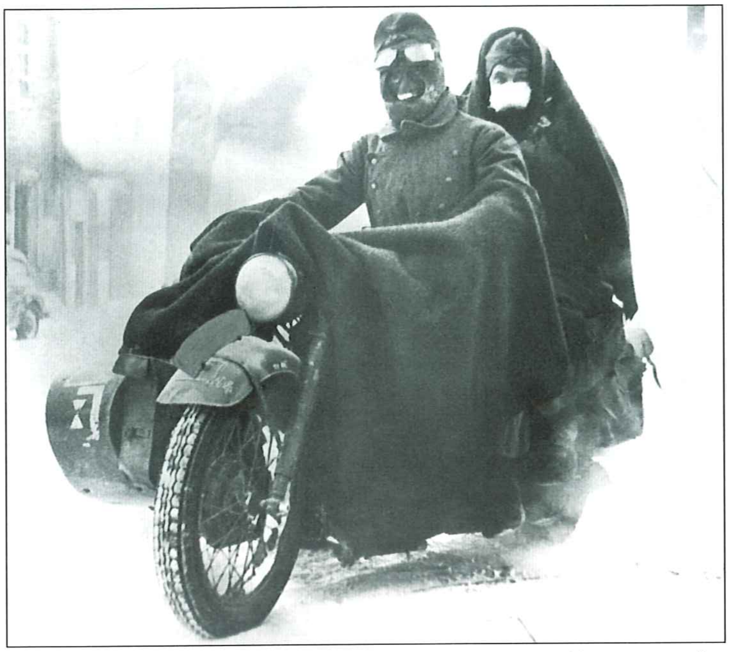
An example of tactical markings painted on the mudguard of a BMW R12 combination, this time two signs of a motorcycle reconnaissance platoon composed of crossed circles. The team of motorcyclists was photographed during a meal break after returning from a reconnaissance mission somewhere in Russia in late summer 1941. The two soldiers seen at the left are wearing the standard M1934 motorcyclists rubberized coats, while the three men at the right are wearing their standard M1935 field uniforms. Note the unusual long bags, purpose unknown, hanging from the belt of the soldier second from the right. Stick hand grenades are stowed between the headlight and handlebars for easier access in critical situations.



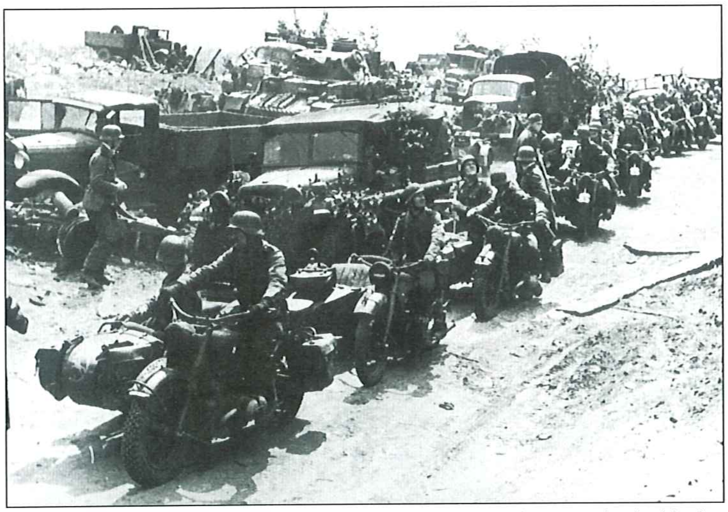
Sandy roads created problems for motorcyclists not only in North Africa, but also in Russia. Deep ruts in such sandy roads were very often dangerous for inexperienced motorcyclists, making it safer to push rather than drive. Note the tactical marking for a motorized infantry company painted on the sidecar and the rear mudguard of the Zundapp KS500. An unrecognizable unit emblem is painted in a shield beside the tactical marking on the motorcycle.



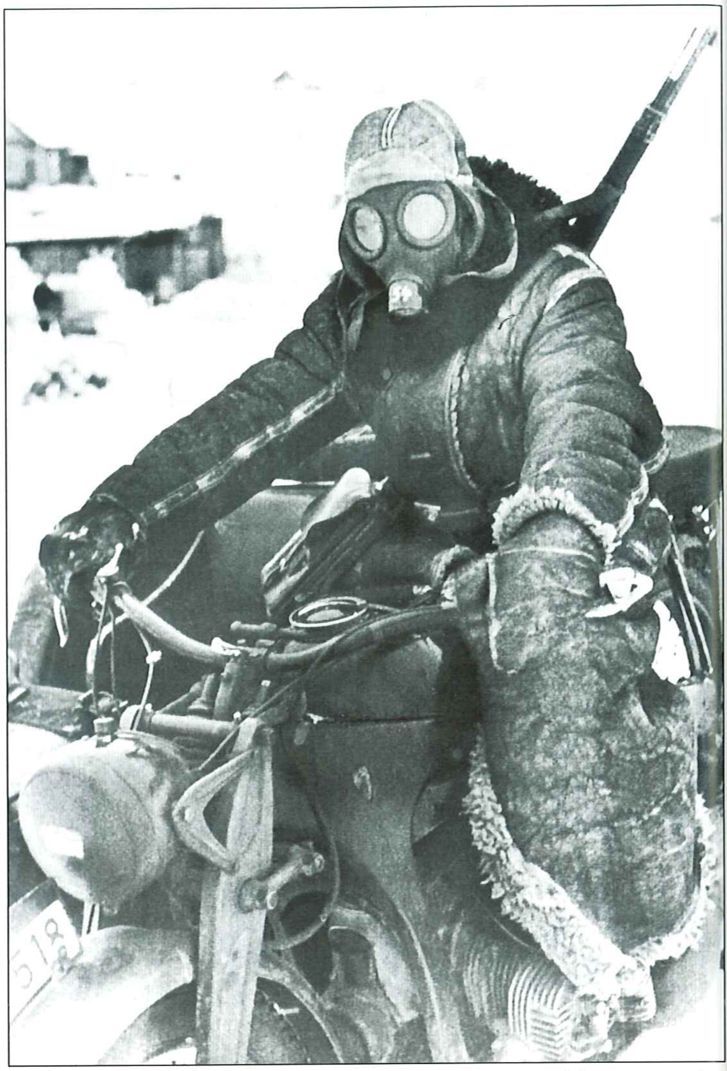
If the roads in Russia were not sandy, they were muddy. Long streams of mud indicating where roads should be, were encountered by German troops not only during the spring and autumn seasons, but on rainy summer days as well. After 2-3 days of rain, roads became impassable for wheeled vehicles and horses were employed to help keep things moving. Here we see an example of a motorcycle moving with the help of these four legged animals. Without their help, the motorcycle would have to be abandoned until warmer, dryer weather arrived.



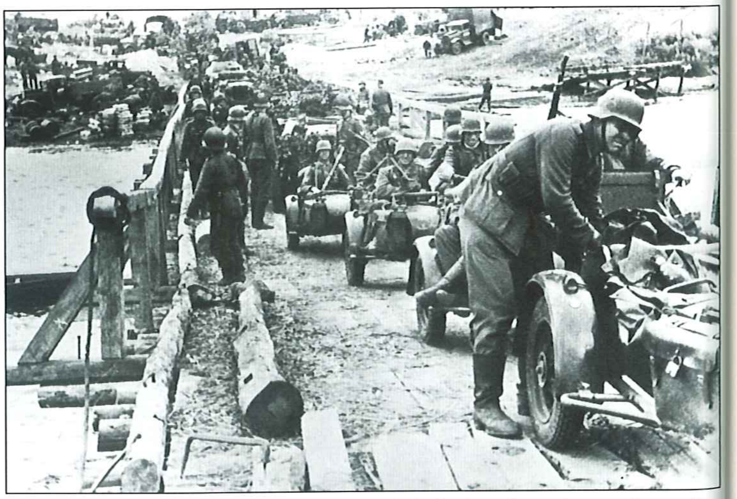
There was no special winter clothing for motorcyclists. Here we see the use of military wool blankets with an improvised mask for the driver. The passenger also has a dressing over his face to protect against the icy wind. Both soldiers are wearing the standard M1938 field cap with the flaps pulled down and the standard greatcoat, which was warm enough for German winters but not suitable for the extreme Russian winter. The license plate on this BMW R12 combination is illegible due to the censors work, but there is the tactical marking still visible on the mudguard which indicates the 14th company of a motorized infantry battalion, the heavy weapons company. Just behind this sign, under the light, is an inscription which specifies tire pressure, 1.5 atu, in white. The marking on the front of the sidecar under the tactical sign is of an unknown unit.



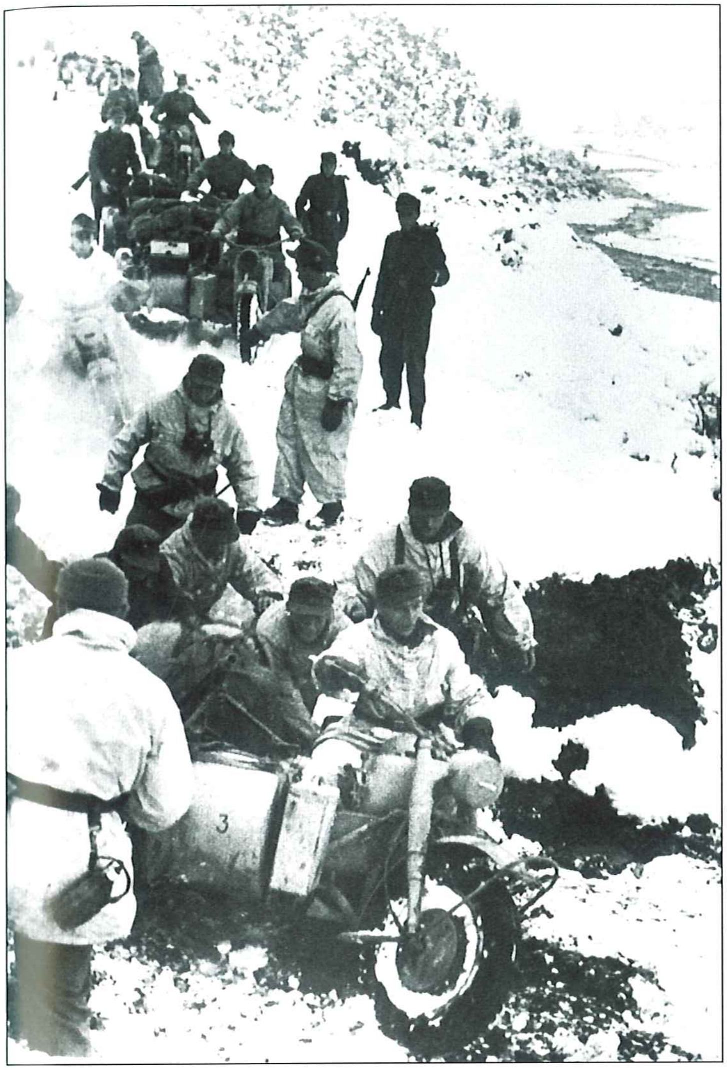
A full platoon of BMW R75 motorcycle combinations marked with the white emblem of 24.Panzer-Division, a jumping horse and rider in a broken circle. The emblem was based on that of the old 1.Kavallerie-Division which was reorganized into the 24.Panzer-Division in 1942. This unit was employed in "Operation Blue", which led it to Voronezh and later to Stalingrad. This photo was taken while columns of 24.Panzer-Division were crossing the Don bend west of Stalingrad in July 1942. The river crossing was accomplished in the same location where Soviet motorized units retreated after the collapse of their armored counter-attack. Note the abandoned Russian ZIS trucks and mortars in the background. Also visible are a Pz.Kpfw.IV Ausf.E, an Sd.Kfz.10, Opel Blitz and Steyr 1500A.



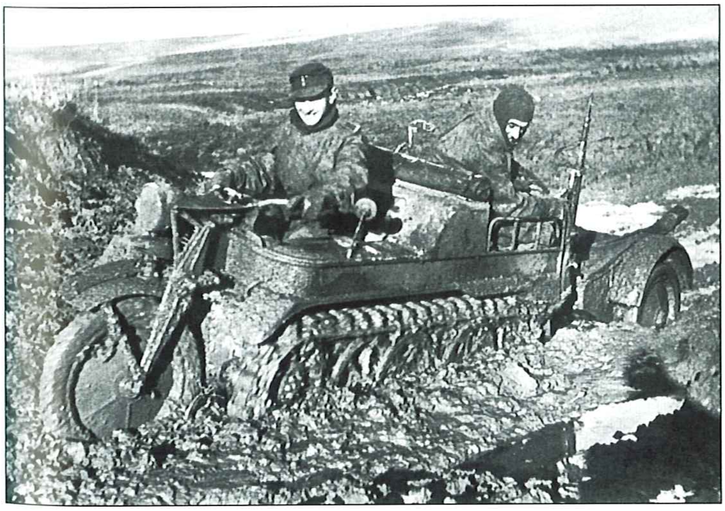
This motorcyclist employs a more unusual type of face protection against the icy wind, with what looks like a civilian cap and a heavy sheepskin coat and mitts. He is equipped with the standard Mauser K-98 rifle and M1935 leather map case. Despite the snow covered landscape, this Zundapp KS600 is still painted with the standard dark gray paint in use in 1941. The inscription showing the tire pressure is visible while part of the license plate is hidden from view.



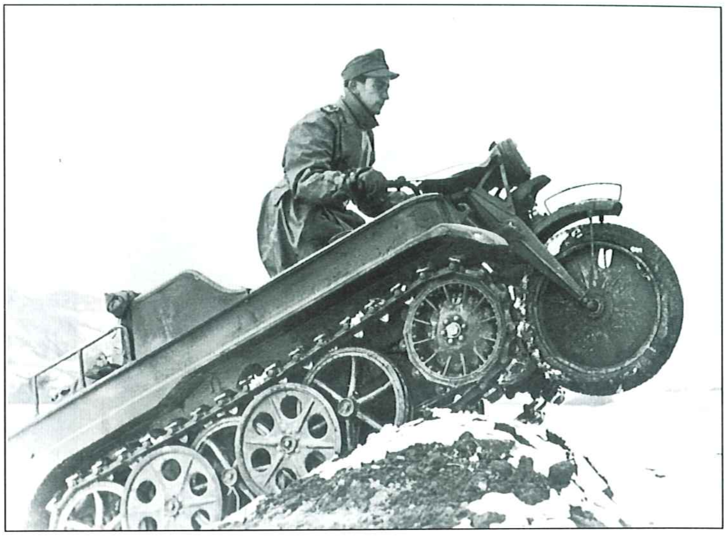
Another view of the same column a little farther down the road crossing the river. The same Panzer IV and trucks can be seen in the background. The third BMW R75 combination has a mount for an MG34 on the sidecar indicating its use as a support vehicle. Behind the motorcycle platoon, Sd.Kfz.10 half-tracks can be seen with foliage covering the front of the vehicles.



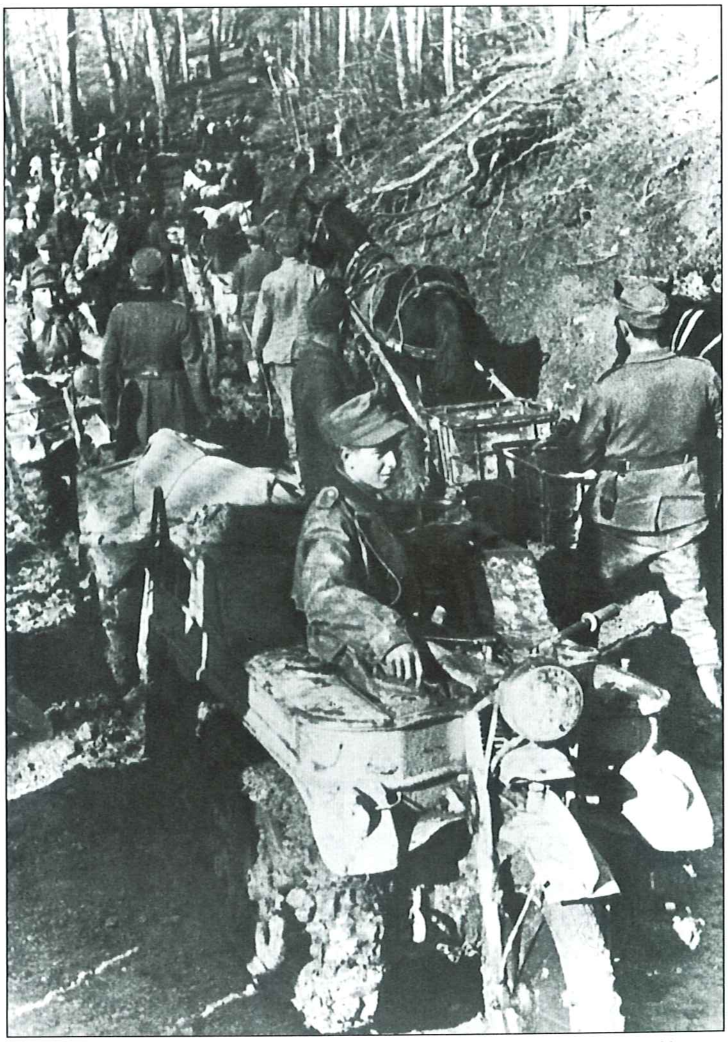
The leading BMW R75 motorcycle combination of a motorcycle platoon from a Gebirgs-Division (note the Edelweiss badge on the Bergmutze of the soldier standing behind), struggles through soft ground in mountainous terrain somewhere in south-east Europe, winter 1943/44. The motorcycle is heavily loaded with the crew belongings and the sidecar is equipped with an MG42. It appears to be painted in the standard European overall sand color. The number painted on the sidecar is not common and could indicate the 3rd platoon but could also indicate the 3rd motorcycle in the platoon.



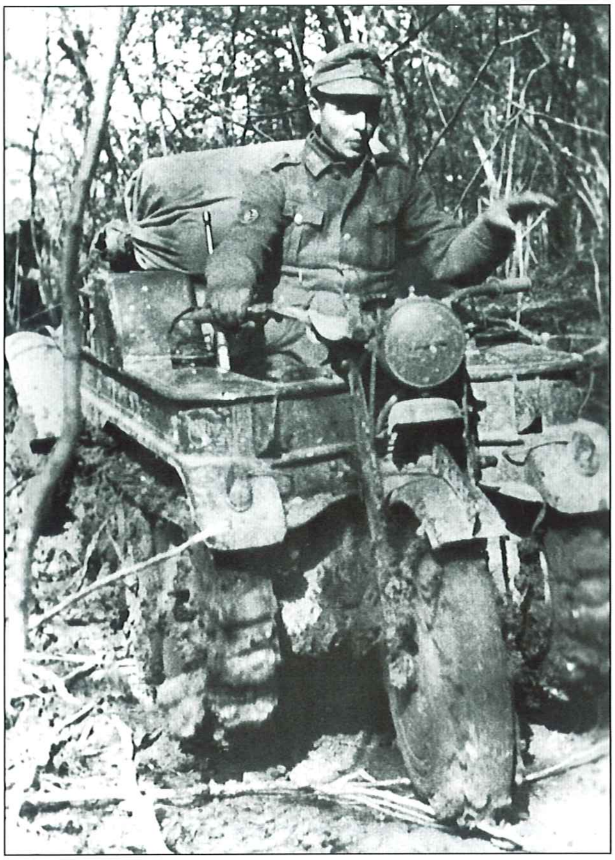
Though completely covered in mud, this Kettenkrad is still immediately recognizable. The Kettenkrad was the perfect vehicle for such terrain where it was impossible for standard motorcycles to operate. Not a light vehicle, weighing about 1,280 kg., its 36 hp engine was capable of propelling it, with its 2-3 man crew and 450 kg. capacity trailer, through the worst Russian mud, as can be seen in this photo.

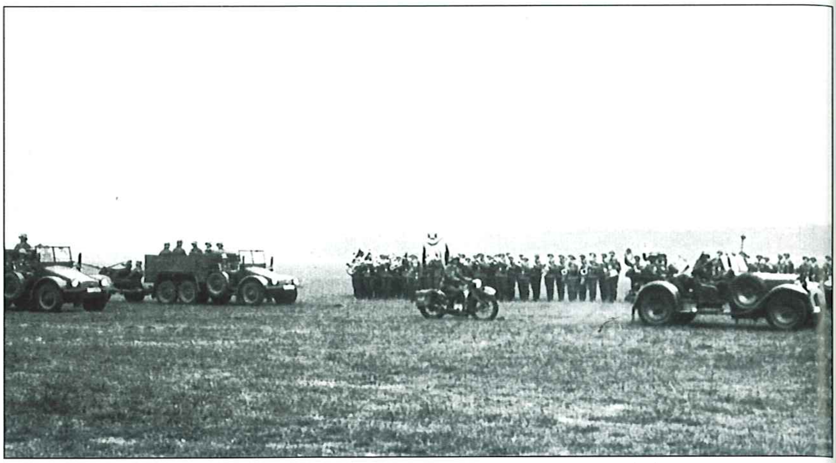


The NSU HK100 (Sd.Kfz.2), known as the kleines Kettenkraftrad, or Kettenkrad for short, was a completely different kind of motorcycle. Small and quite fast, with a maximum road speed of 70 kmh (cross country 50 kmh), it could travel across difficult terrain, crossing narrow forest tracks and desert expanses equally well. This photo shows very well the tracked chassis of the Kettenkrad which was constructed similar to the Sd.Kfz.10, Sd.Kfz.250 and 251 half-tracks. Note the Notek blackout light attached to the front mudguard below the main headlight. Normally standard equipment for most German vehicles, they were not used on any motorcycle other than the Kettenkrad.



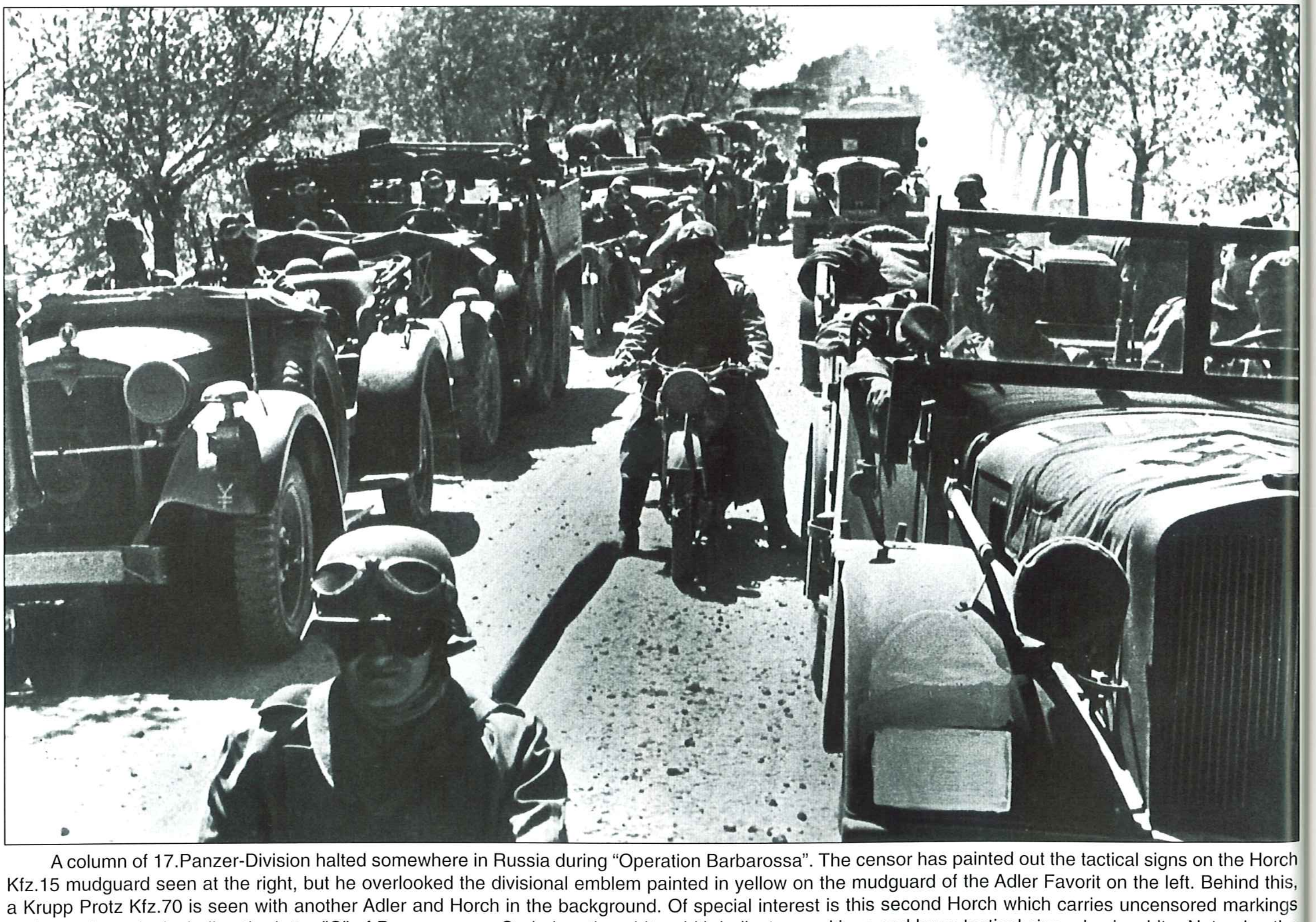
Here we see a group of three Kettenkrads waiting for a column of horse drawn carts to pass by on a narrow path over hilly terrain. All of them are loaded down with equipment which also completely fills the trailer attached to the leading Sd.Kfz.2. It can be seen that these vehicles have been through some difficult, muddy conditions as well.



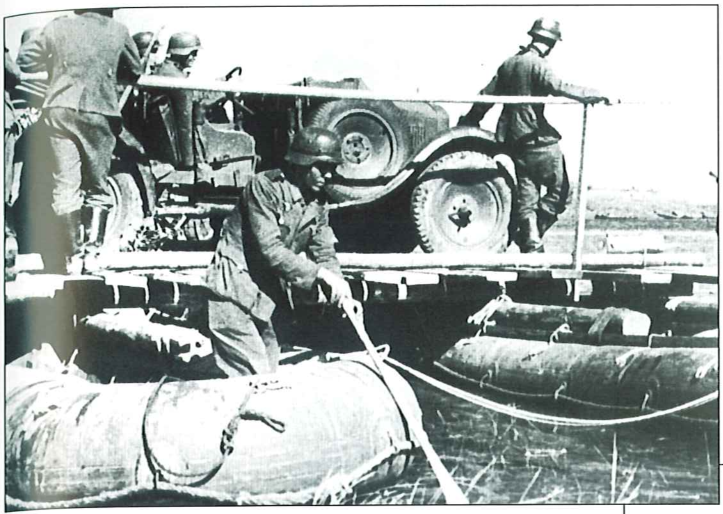


Typical parade in review performed after maneuvers or during state or army ceremonies. Here we can see the staff and part of the first anti-aircraft battery moving across a field with the inspecting officials behind the photographer and divisional band in the background. The vehicle on the right is the first mass produced German cross-country car, the Mercedes-Benz Stuttgart Kfz.11, which was later replaced by the Kübelwagen, while at the left are Krupp Protz Kfz.81 light trucks, towing 2cm FlaK 30 anti-aircraft guns. The Krupp Protz was the most common transport vehicle in the Wehrmacht in the mid 1930s.

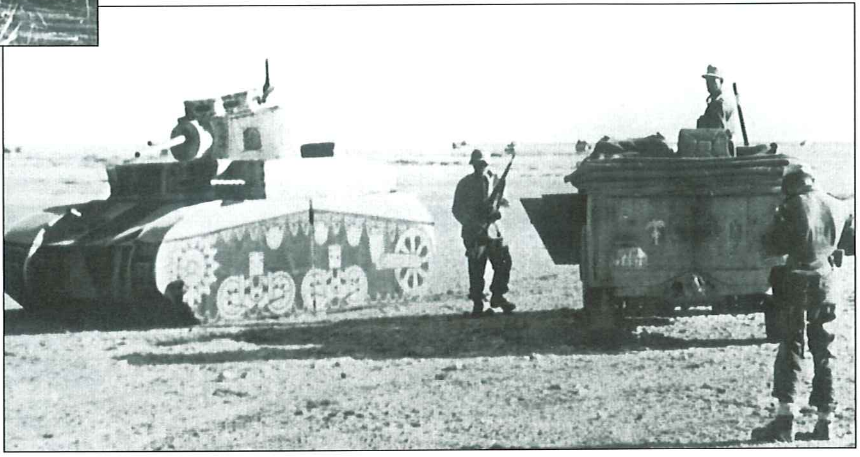
Another Kettenkrad of the same column traveling along a forest path with supplies for the fighting troops. Developed in 1940, there were 8,345 units built to the end of the war by NSU and, under license, by Stoewer. Production continued until 1948 for use by the German forestry services. The vehicle was useful but much too specialized. Note the NSU emblem on the front corner of the body, visible just above the mudguard. It was similarly located on the opposite side of the Kettenkrad as well.



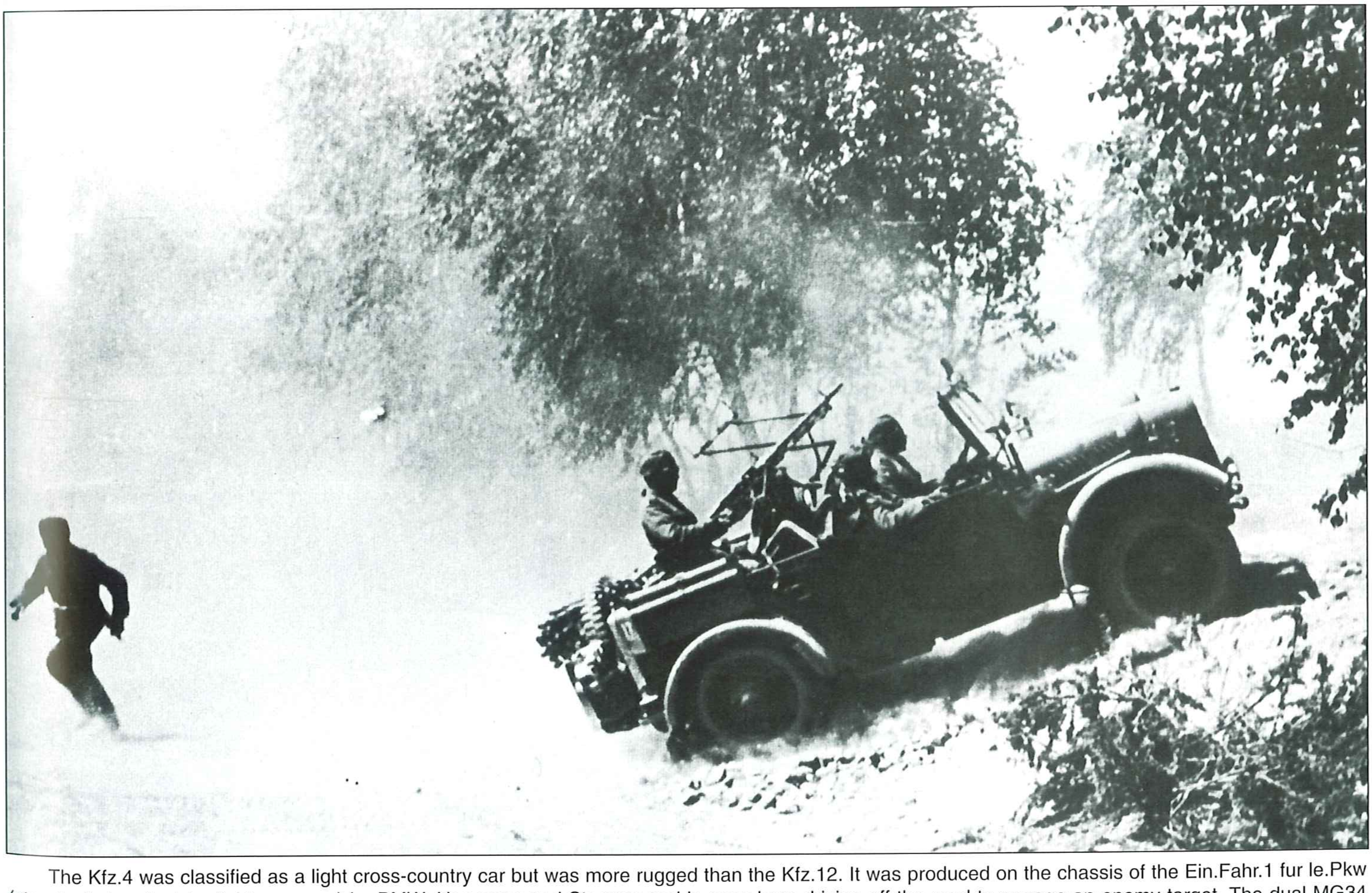
A column of 17.Panzer-Division halted somewhere in Russia during "Operation Barbarossa". The censor has painted out the tactical signs on the Horch Kfz.15 mudguard seen at the right, but he overlooked the divisional emblem painted in yellow on the mudguard of the Adler Favorit on the left. Behind this, a Krupp Protz Kfz.70 is seen with another Adler and Horch in the background. Of special interest is this second Horch which carries uncensored markings on its mudguards, including the letter "G" of Panzergruppe Guderian, the white width indicator markings and large tactical sign, also in white. Note also the motorcyclist in the foreground with a spare set of goggles on his helmet and a protective cover on his rifle.



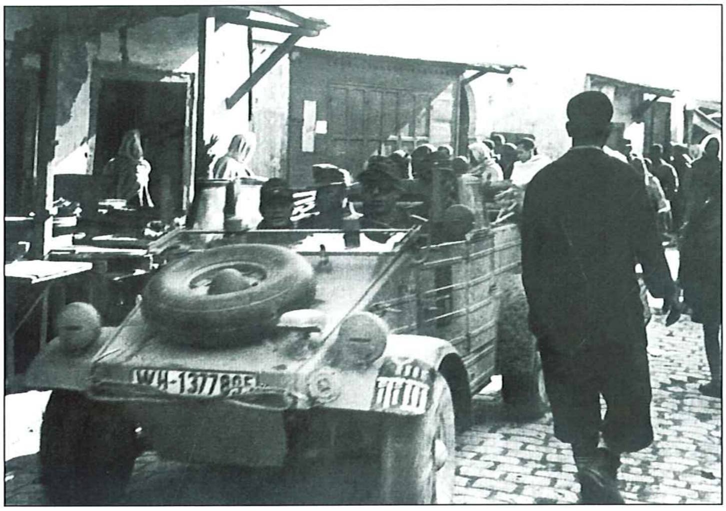
A pontoon ferry crossing a river in Russia in 1941 with a Mercedes-Benz Stuttgart Kfz.11 or Kfz.12 on board. The first mass produced cross-country car of its type produced for the Wehrmacht, it was old and obsolete when WWII began. Vehicles of this type, about nine models, were too big and did not have the good cross-country capabilities of their successor, the Kübelwagen, or their United States counterparts, the Willys Jeep.



A much better cross-country car was the Horch, shown here in North Africa while its crew inspects a dummy M3 Stuart light tank abandoned by the British in March 1942. It is covered with yellow-sand camouflage paint over the standard dark gray and carries the palm and swastika emblem of the DAK painted above and to the right of the license plate WH 228970. The Horch was produced in many versions of three different models (Kfz.15, 16 and 17) which were heavier and stronger than the Kfz.2 and 4, so they could carry more men and equipment over the same sort of terrain.

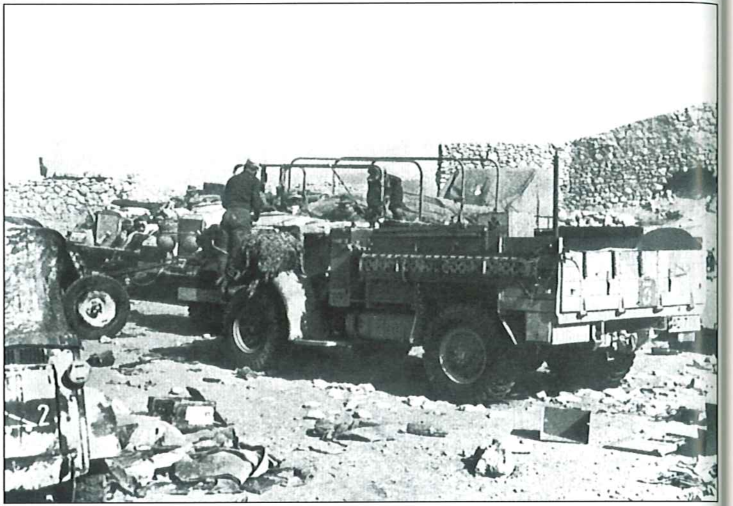


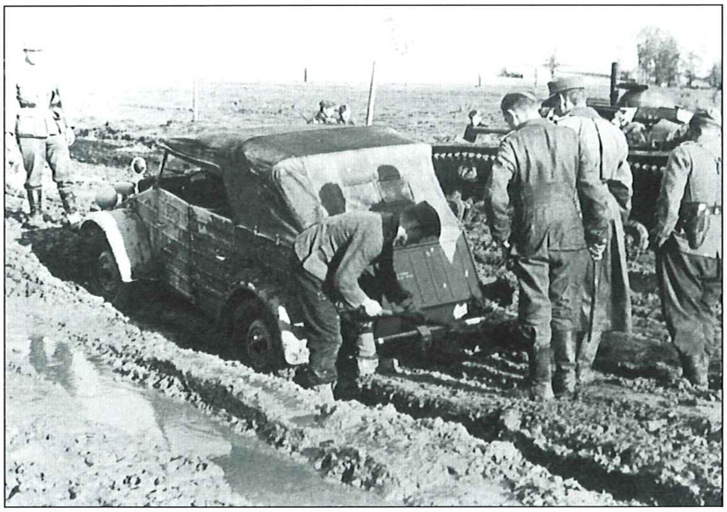
The Kfz.4 was classified as a light cross-country car but was more rugged than the Kfz.12. It was produced on the chassis of the Ein.Fahr.1 fur le.Pkw (standard chassis 1 for light army car) by BMW, Hanomag and Stoewer and is seen here driving off the road to engage an enemy target. The dual MG34 installation seen on the back of this Stoewer 40 was a typical light anti-aircraft mount widely used in all Wehrmacht divisions during the early stages of the war and was installed on other types of light cross-country cars as well.



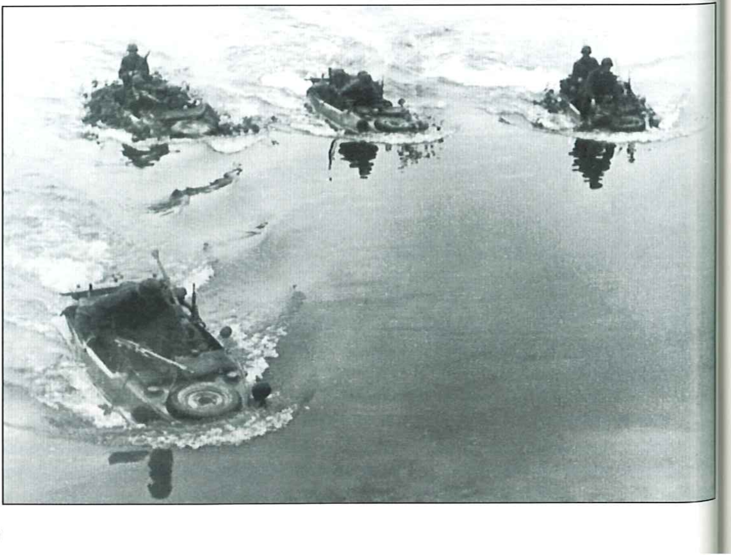
Most popular among all the troops was the VW Type 82 Kübelwagen, the best German vehicle of its type because of its cross-country capabilities, speed and manageability. The VW Type 82 was also simple to service and economical to produce, which were just as important as its capabilities. This is a Kübelwagen in North Africa belonging to the 3rd battalion of Art.Rgt.90 of 10.Panzer-Division, identified by the markings visible on its left mudguard. The tactical signs are painted in white while the divisional emblem is yellow, both on the original dark gray paint. The same combination is repeated on the driver's door. The license plate shows a black WH-1377895 painted on a white background with a black border. The Kübelwagen has also been fitted with the desert balloon tires.

Kübelwagens were used in all the sub-units of the Panzer divisions including second line and non-combat ones as well. Among these were the medical (Sanitat) troops and here we see a VW Type 82 from one of them marked with a Red Cross emblem and the tactical sign of the 2nd company of a towed anti-tank battalion (Panzerjäger Abteilung). The other vehicles in this photo belonged to this unit as well, including the Canadian made Chevrolet 8 cwt. truck which still carries a British marking, a yellow or white "3" stenciled on a dark colored metal plate and a crudely applied tactical sign of the Panzerjäger company. In the background is a Kfz.15 and two other trucks, probably British as well, just near the 3.7cm PaK 36 anti-tank gun. Note the weathered appearance of the yellow-sand camouflage paint applied over the dark gray base on the Kübelwagen.



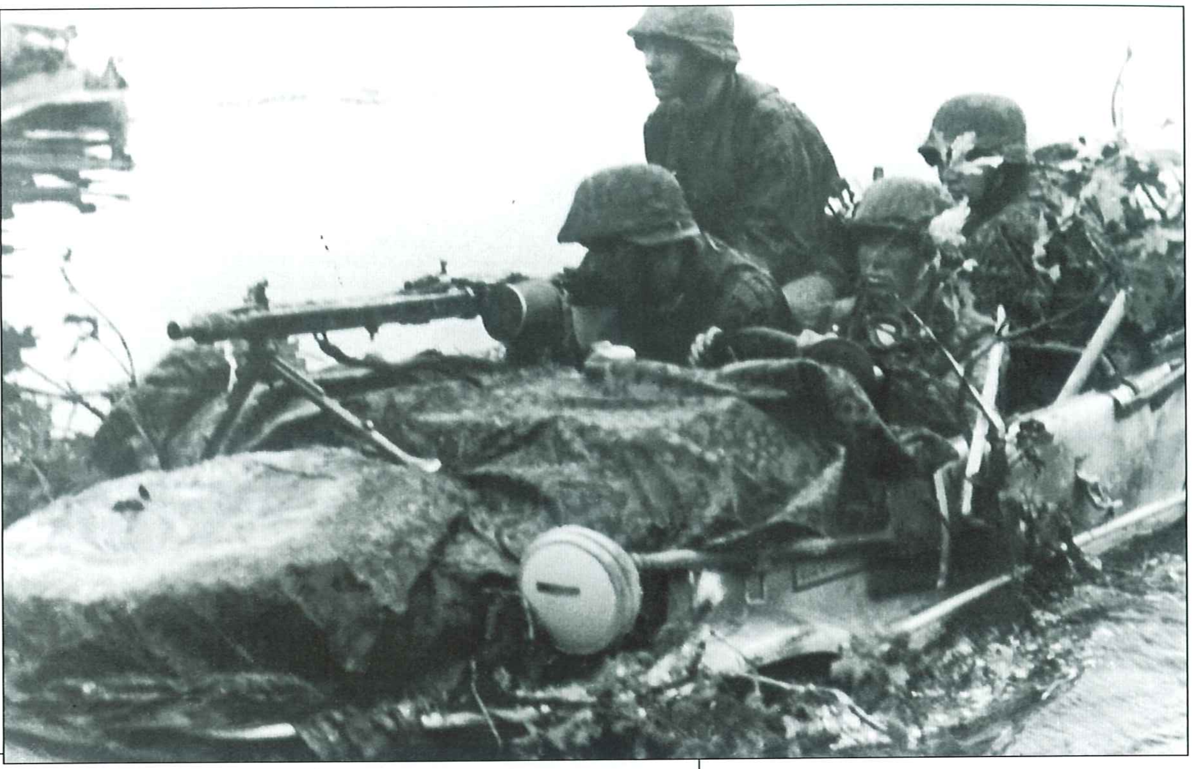


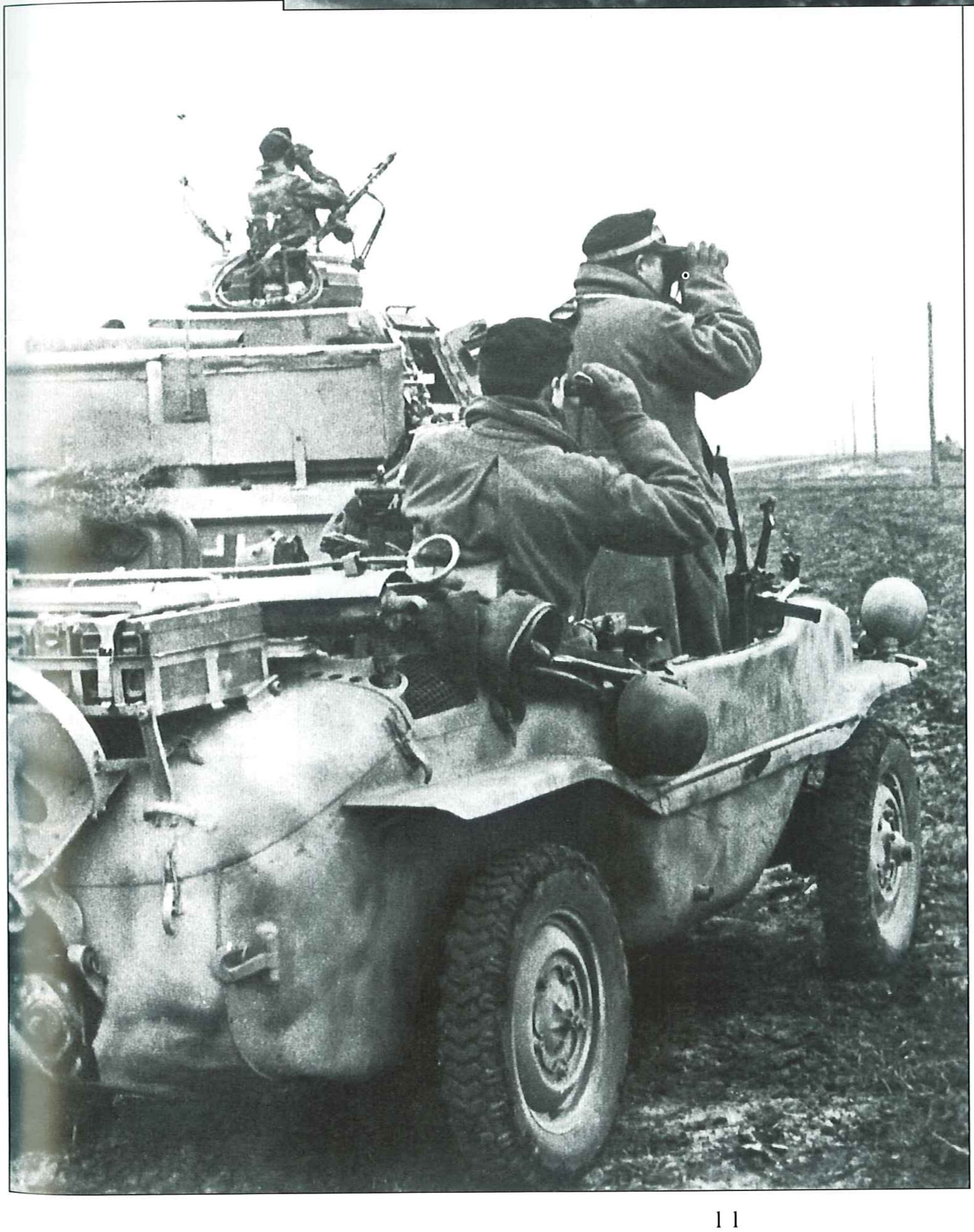
German soldiers struggle to recover a Kübelwagen from a mudhole in Russia, early autumn 1943. The situation the Kübelwagen is in looks much better than that of the Panzer III in the background, which appears to have slipped off the road as well. The Kübelwagen is well dug in though and the weight from the rear mounted engine has probably hung it up on the deep ruts causing the wheels to lose traction. Note the difference between the sand camouflage paint seen on the Kübelwagen compared to the dark gray color of the Panzer III.



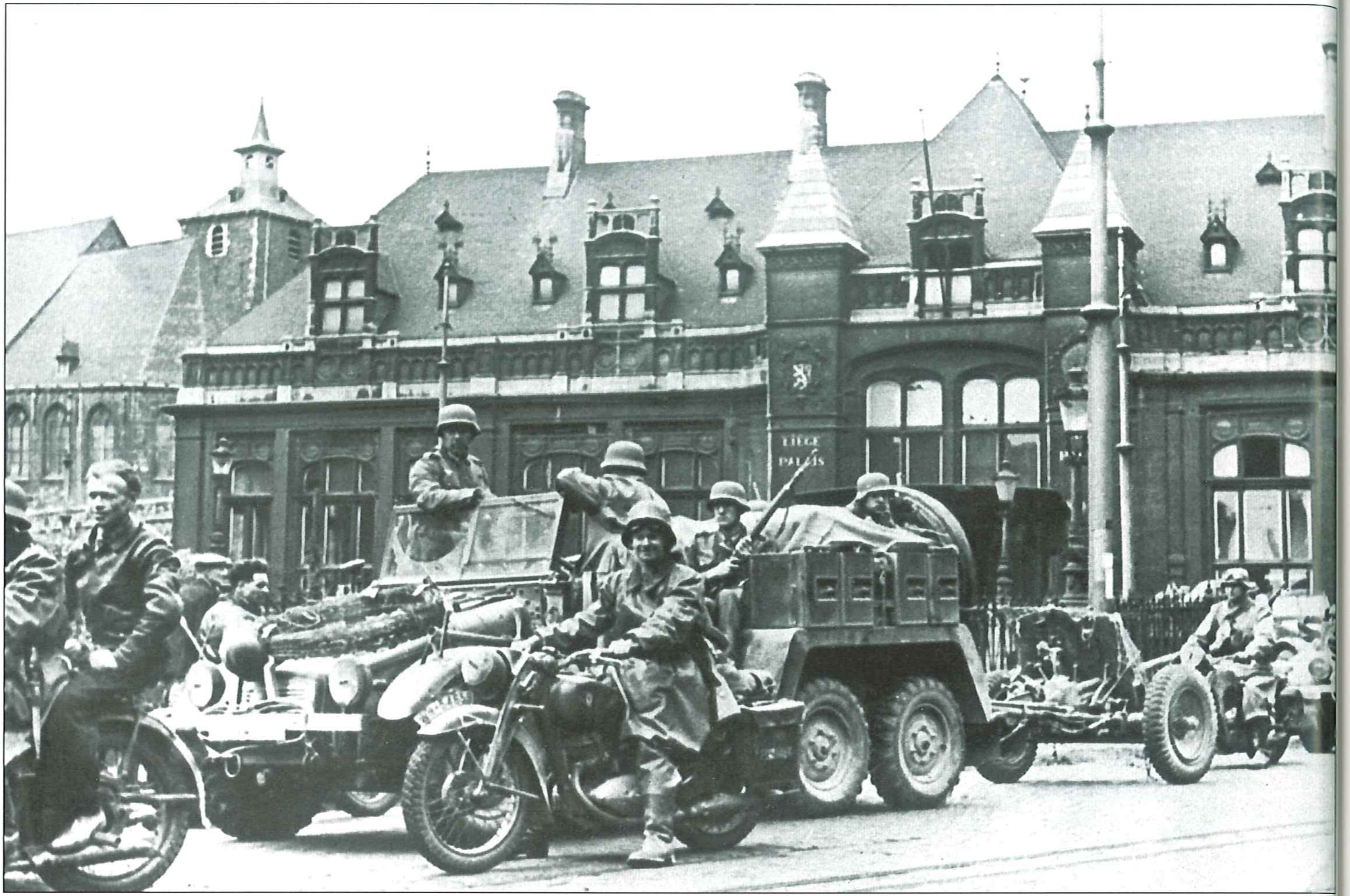
Looking almost as capable as veteran troops of the Waffen-SS, a platoon of these Ukrainian volunteers perform a simulation of an amphibious assault across a river. Note how low in the water the vehicles sit when fully loaded. This unit was formed in the summer of 1943.

Aufklärungsabteilung (reconnaissance unit) troops from the 14.Galizische SS-Freiwilligen-Division, as it was known in May 1944, perform river crossing exercises in a Schwimmwagen. The resourceful Ukrainians have covered the front of the vehicle with a zeltbahn (shelter quarter) as a means of camouflage.

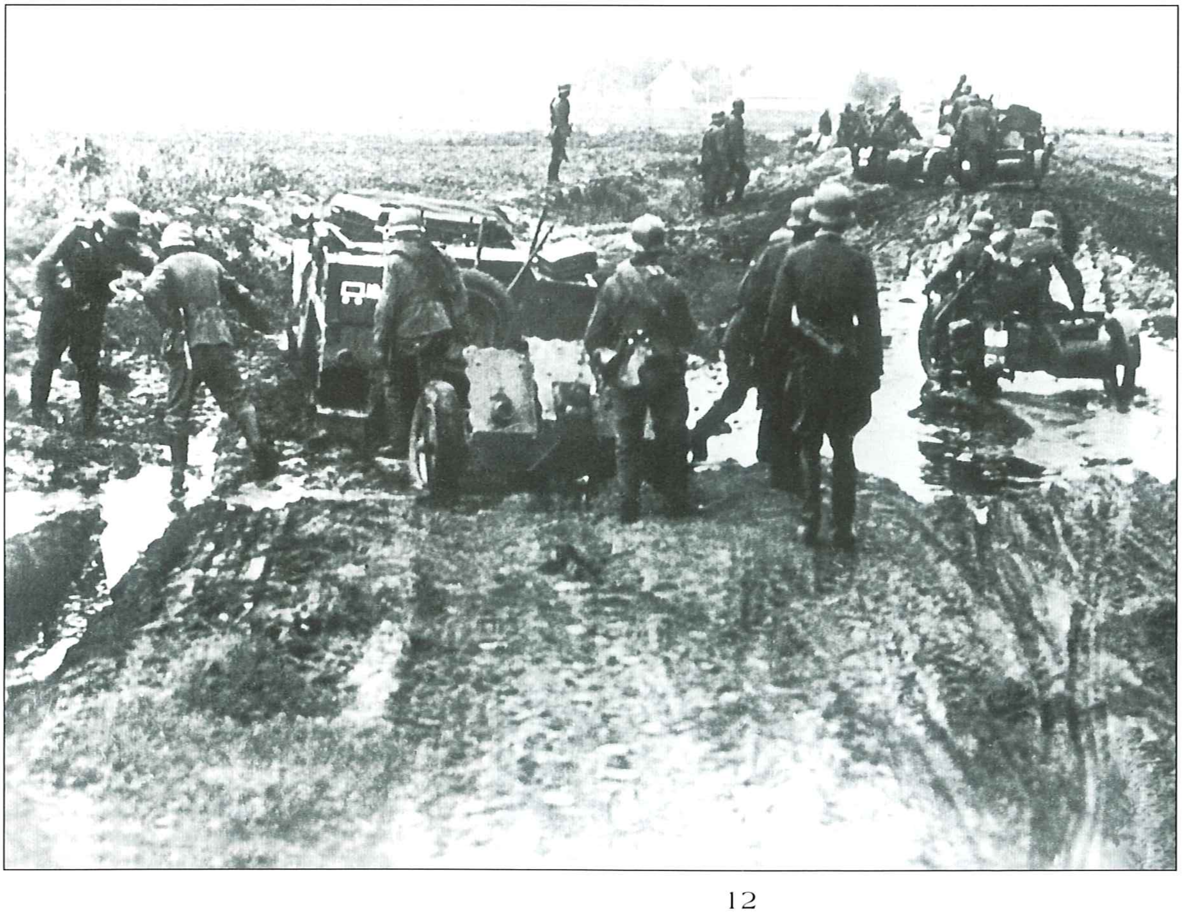




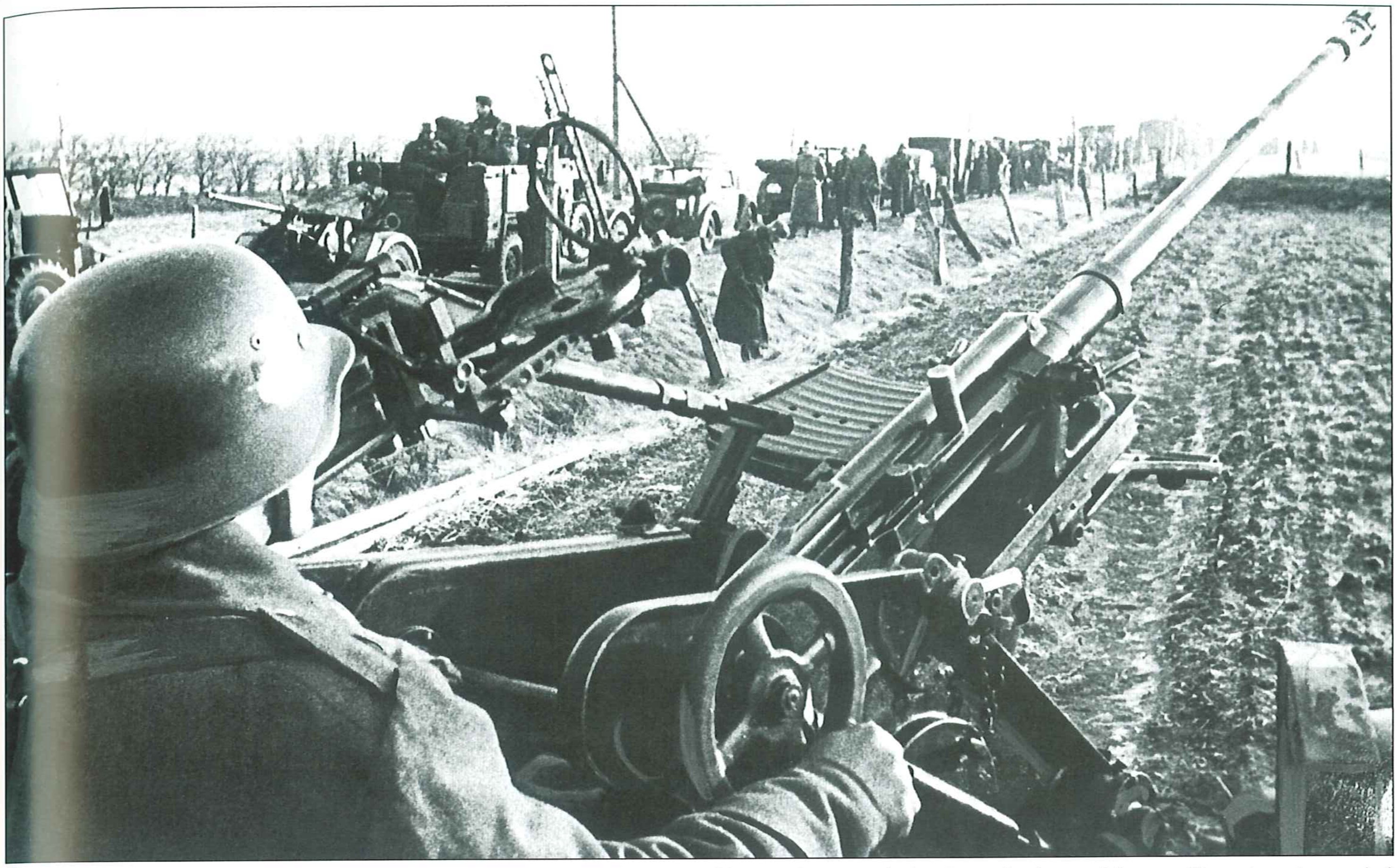
This interesting photo shows a Panzerbefehlswagen III Ausf.K command tank. The star antenna is visible on the rear of the engine deck. The commander and two other officers standing in the VW Schwimmwagen use binoculars to watch the battle from a distance. Note the MG ammunition boxes stored in the special rack on the back of the VW. This would have hindered the efficient deployment of the propeller.



A column from a Panzerjäger Abteilung halted on a street in Liege, Belgium during the "Blitzkrieg" in May 1940. The vehicle seen behind the DKW NZ350 motorcyclist is the famous Krupp Protz Kfz.69 being used as a tractor for the 3.7cm PaK 36 anti-tank gun. This version varied from the Kfz.70 personnel carrier in the rear part only, where the seats for an infantry squad were replaced by ammunition racks and seats for the gun crew. There is a roll of barbed wire and a French helmet on the front of the vehicle. Note the civilian rider on the motorcycle on the left.

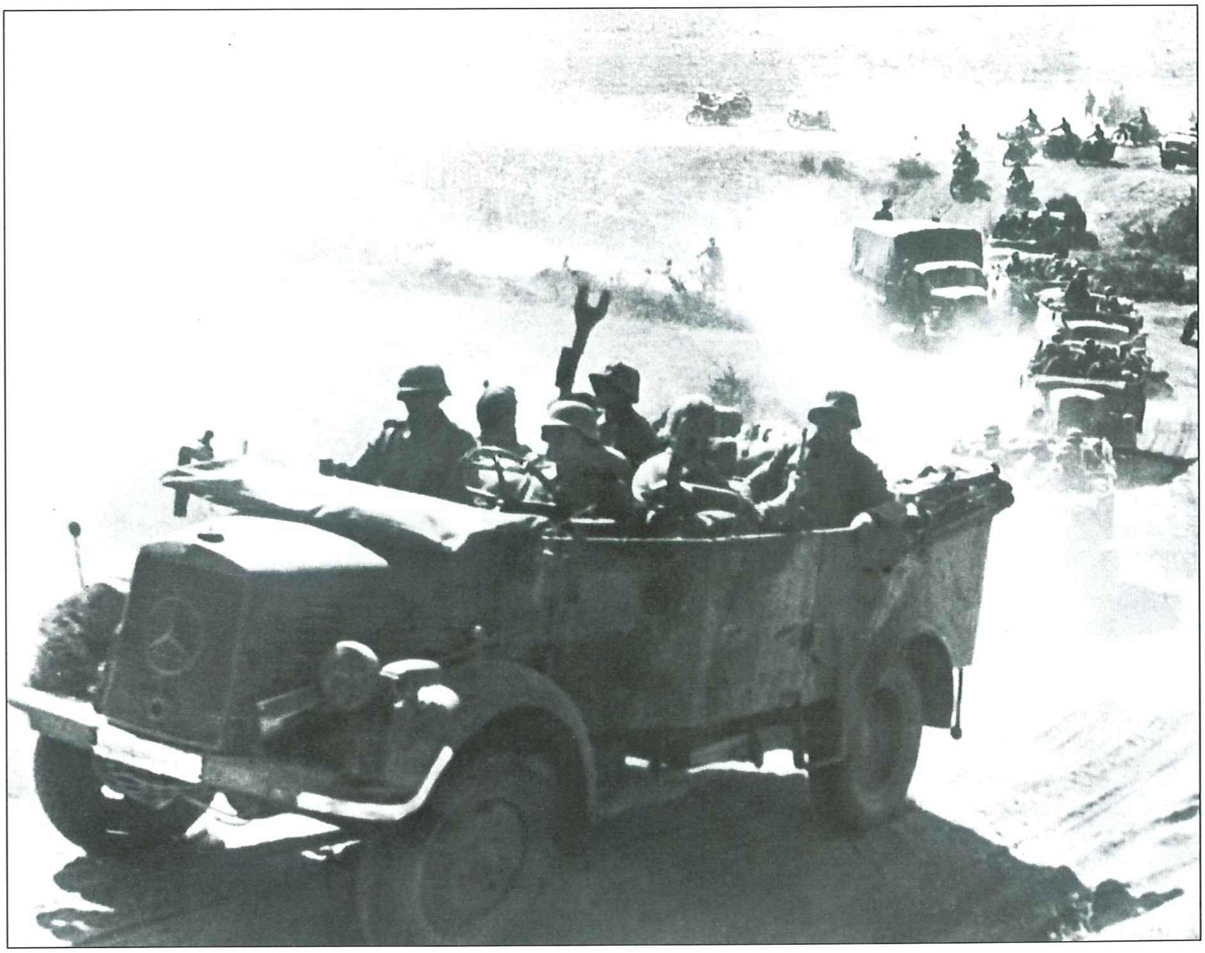


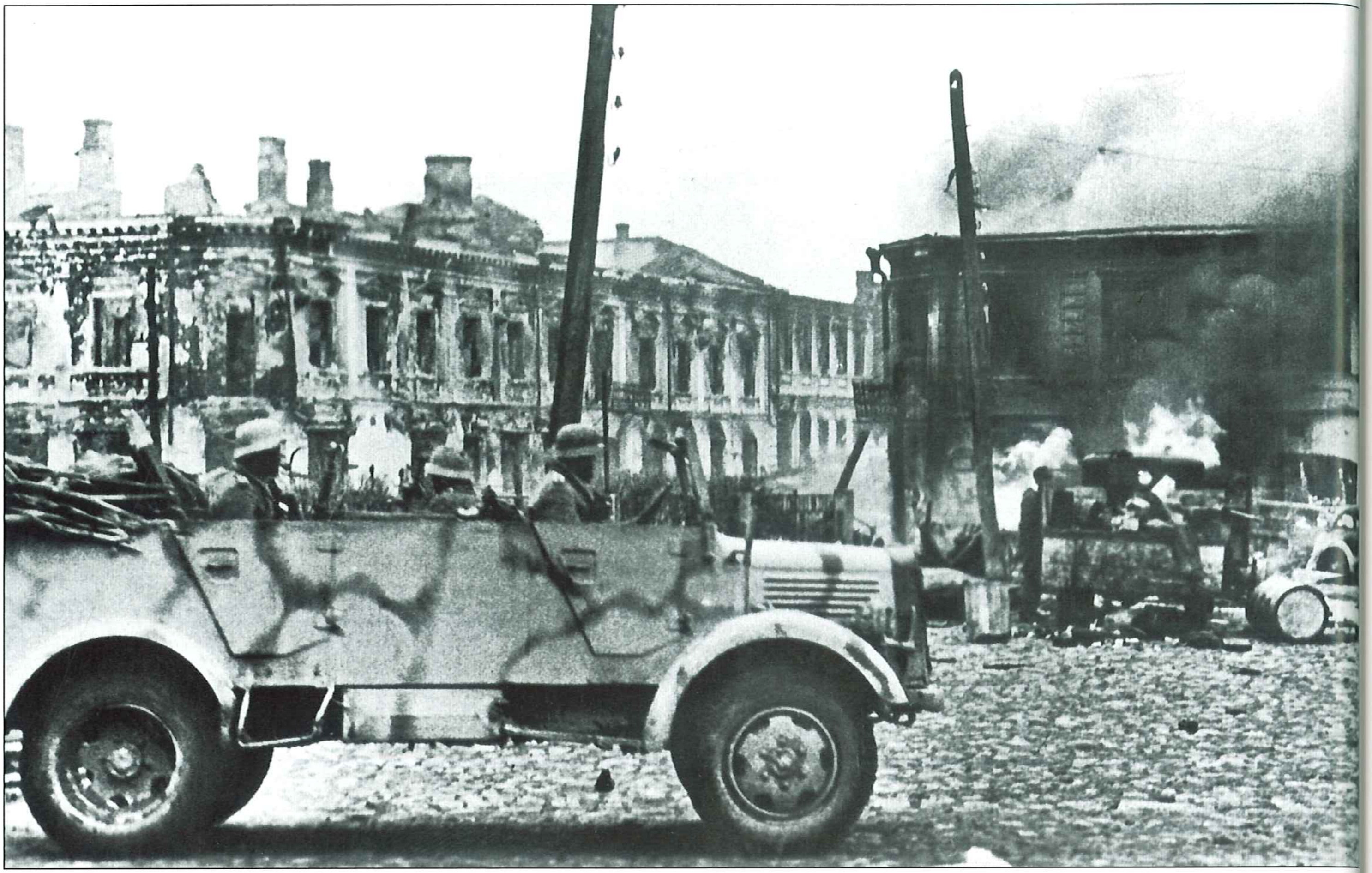
An artillery troop negotiates a muddy road through a field with a Krupp Protz Kfz.69 towing a 7.5cm leIG 18 bringing up the rear. The Protz is marked with the tactical sign for the 10th company of a motorized infantry regiment. The quality of roads in Poland, or generally Eastern Europe, was quite surprising to German officers, who were accustomed to Hitler's "autobahns" in Germany. Another problem encountered was the large numbers of refugees who blocked all the main roads during the first days of the "Blitzkrieg".



A column of cars and trucks during a march break, probably somewhere in Western Germany during the early stages of the war. The column is guarded by a 2cm FlaK 30 light anti-aircraft gun while other similar weapons are being towed by the Krupp Protz Kfz.69 in the background. This was the most common type of towing vehicle during this period and was replaced by the heavier Horch 1a later on. Note the details of the 2cm gun and sight in the foreground.

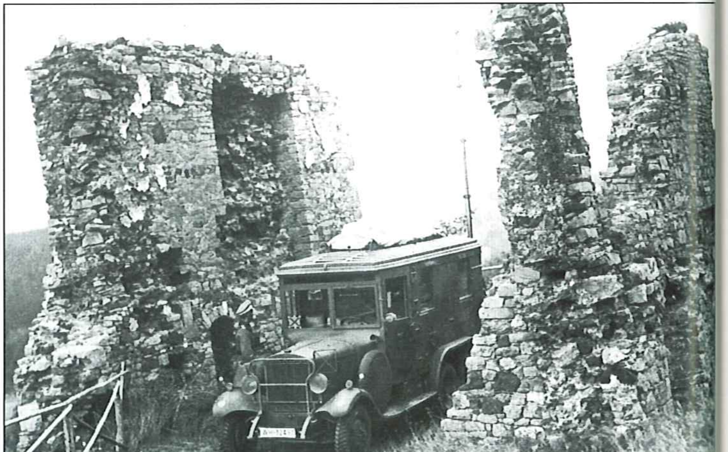
A Mercedes-Benz Type L 1500A is leading a column of divisional vehicles composed mainly of other transports of the same type produced by two different factories. The first three are Kfz.21 from Mercedes-Benz and the next four are Kfz.71 produced by Horch. Between the Opel Blitz and the captured Soviet trucks in the background, can be seen a swarm of motorcycles. An interesting feature of the Mercedes is the firm's emblem on top of the radiator cap. The manufacturer no doubt thought that the soldiers would be unable to handle the enemy without this item because at a critical moment, it could be removed and used as a sight for a machine gun!!! These vehicles most likely belong to 16.Panzer-Division on their march to oblivion at Stalingrad, September 1942.

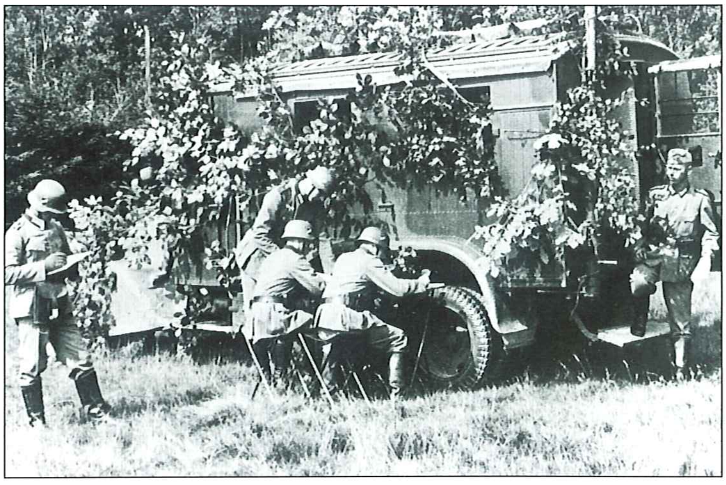




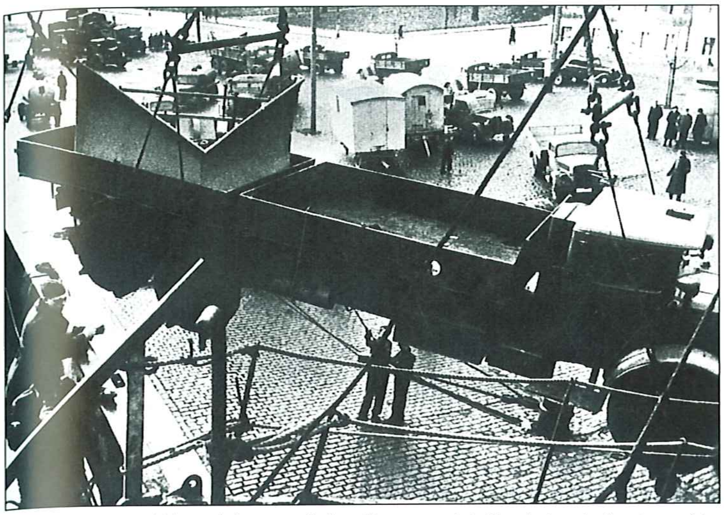
Another Mercedes-Benz Type L 1500A. The s.gl.Pkw (schwere geländegangiger personenkraftwagen) Kfz.21, also produced by Steyr and Phanomen-Granit, served as infantry transport vehicles and as le.gl.Lkw (leichter geländegangiger lastkraftwagen) Kfz.69 light anti-tank gun tractors and Kfz.81 light anti-aircraft gun tractors. The vehicle is painted in overall sand yellow and camouflaged with a wavy brown pattern, typical for autumn. It is driving through Zhitomir in December 1943 after the recapture of the city by 7.Panzer-Division, the last spectacular offensive victory of the Wehrmacht in the Soviet Union.

The command link which had been underestimated by the armored forces of most other armies - mobile radio communications, in this case a Mercedes-Benz type G 3a Kfz.68 model of Funkmastkraftwagen (wireless mast truck) with the license plate WH-32497. Initially, there were many general officers in the Wehrmacht who had difficulty accepting the use of such equipment, but by the late 1930s many of them had been removed from duty and replaced by younger, more progressive thinking officers. The Panzerwaffe was the first to appreciate the value of mobile communications vehicles. They were used on the battlefield and moved together with the armored combat vehicles.

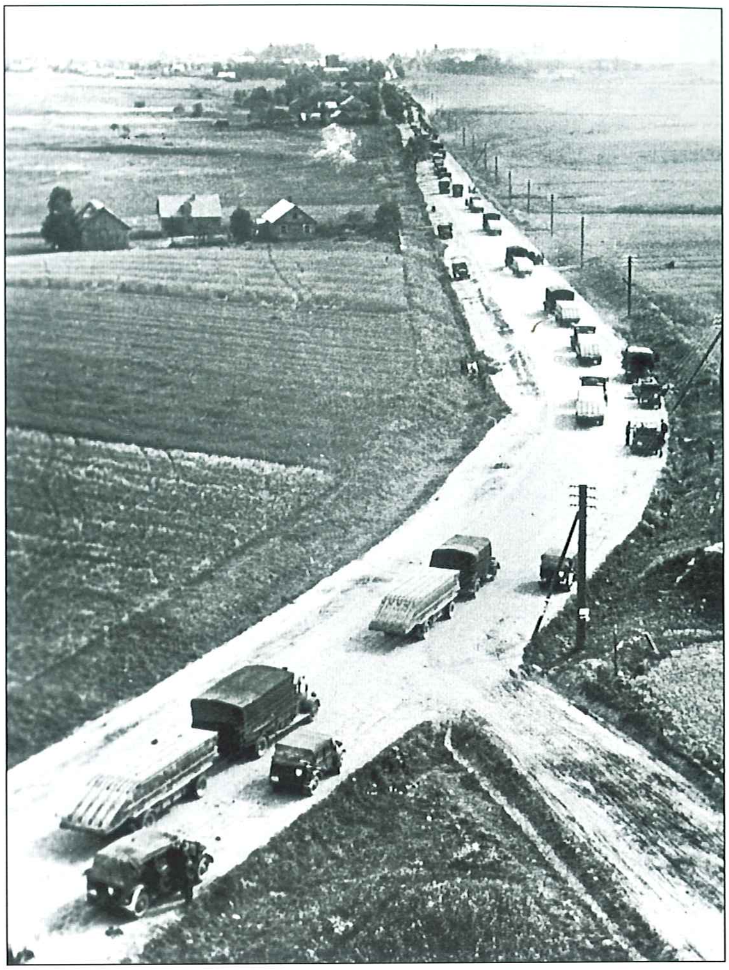




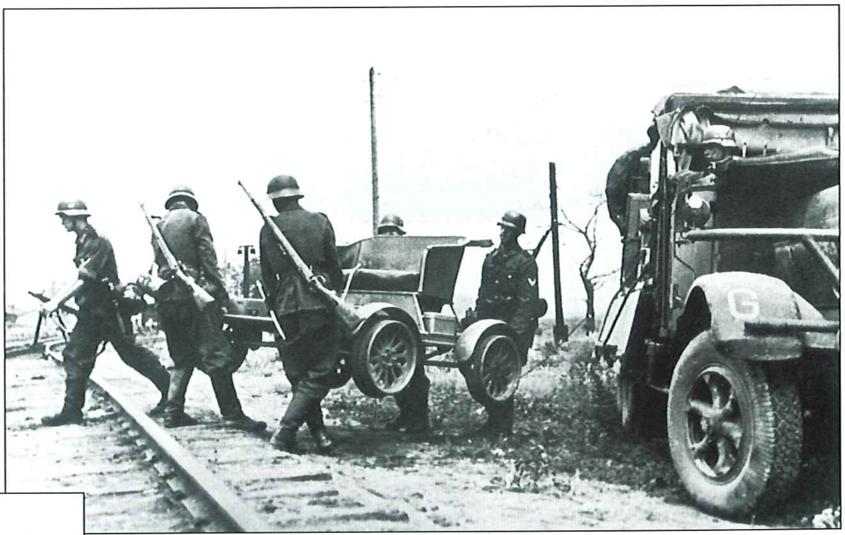
Another wireless mast truck during prewar field exercises in the mid 1930s. Radio trucks like this one helped to create the almost perfect radio liaison in the Wehrmacht that became one of the more important factors of German Army successes, through an improved chain of command. There were no less than four different models of vans used on the chassis for these heavy communications vehicles produced by Mercedes-Benz, Büssing-NAG and Magirus with the Kfz. designation numbers 61-68. The two color camouflage paint on this vehicle is augmented by the use of foliage and a canvas cover on the front. Note the NCO on the left still wears his Reichsheer pattern tunic with slanted pockets on the skirt, NCO tresse on the top and front of the collar and lacks the Wehrmacht breast eagle.



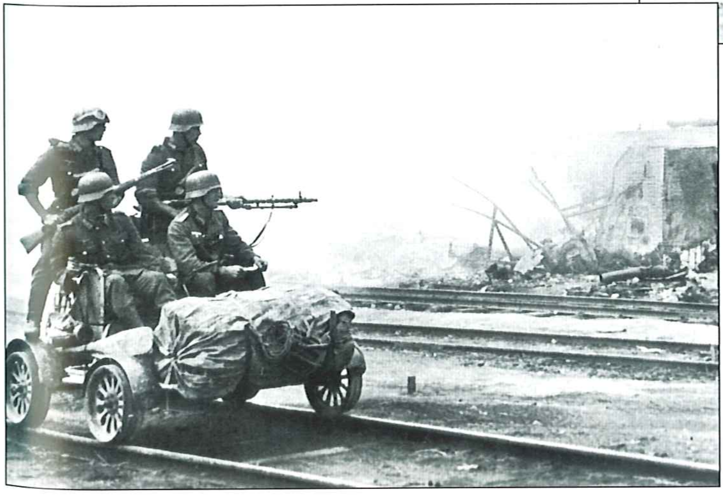
A heavy MAN truck for specialized transport duties is loaded onto a ship bound for Norway in April 1940. These trucks could be fitted with a snowplow, which it is carrying in the rear cargo compartment. Just above the snowplow in the background are three smaller trucks also carrying snowplows, along with a variety of other trucks - Opel Blitz and Ford G917 and even a couple of Kfz.5 tanker trucks, the rarest of the Wehrmacht wheeled, soft-skinned vehicles.



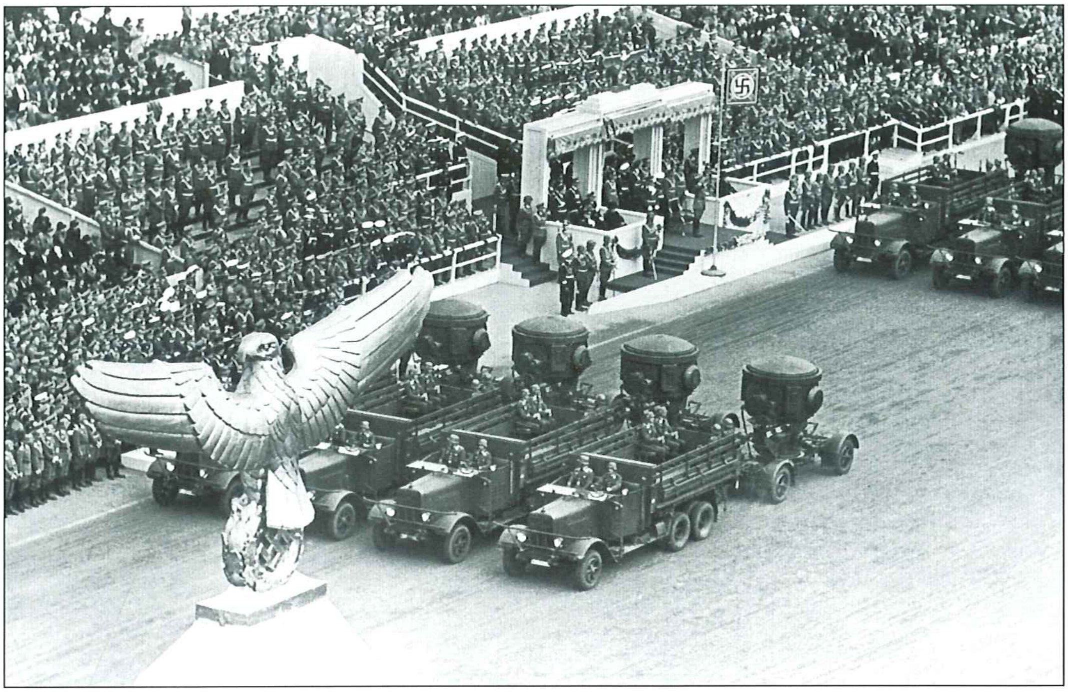
A long column of soft-skinned vehicles seen from the air in the western Soviet Union in the summer of 1941. The heavy lorries in the middle of the road are towing or carrying pontoons to support temporary bridging equipment, while a number of light cross-country cars - Kfz.15 and Kfz.2 - are parked along the side. Note the white width markings and the unit shield emblems painted on the cars.



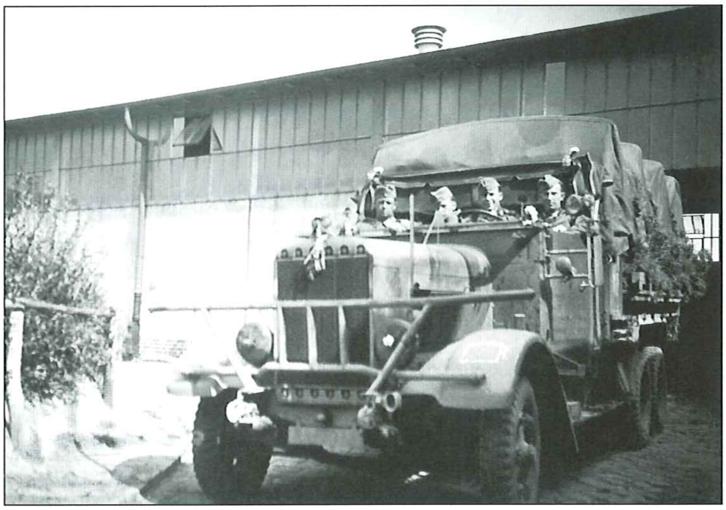
A railroad trolley is unloaded from a Henschel 33 G 1 diesel engined medium truck from one of the Panzer divisions of Panzergruppe Guderian in the Soviet Union during the summer of 1941. This type of equipment was very useful in Russia due to their vast railway network and lack of good quality roads.



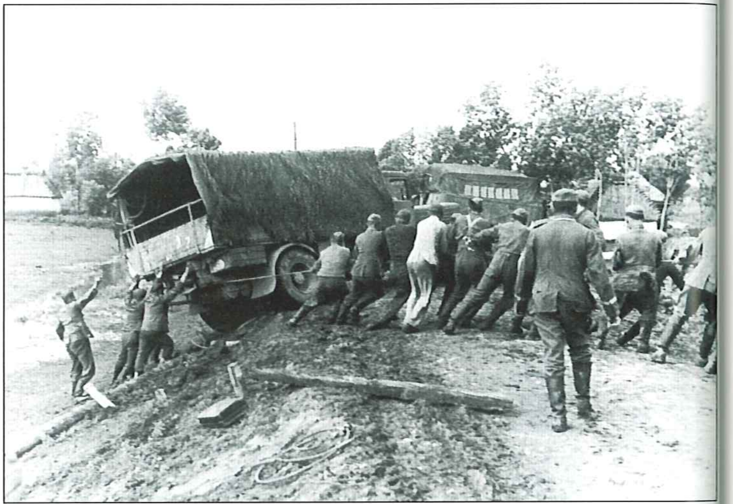
The same group of soldiers passes a railway station still smoldering from the effects of a Luftwaffe attack. Note that the trolley is equipped with a paddle, which could indicate the large bundle strapped to the front contains an inflatable rubber boat.



Two batteries of anti-aircraft searchlights parade before Adolf Hitler during one of the military shows of the prewar period. The searchlights are towed by Kfz.83, Henschel 33 D 1 gasoline engined medium 3 ton trucks produced between 1933 and 1937. It was superseded by the 33 G 1 diesel in 1937 which was produced until 1941. During the war years, the 3-ton class trucks were built by the firms Borgward, Daimler-Benz, Stoewer, Opel, Ford and Magirus. They all bore a strong resemblance to each other, differing only in minor details.

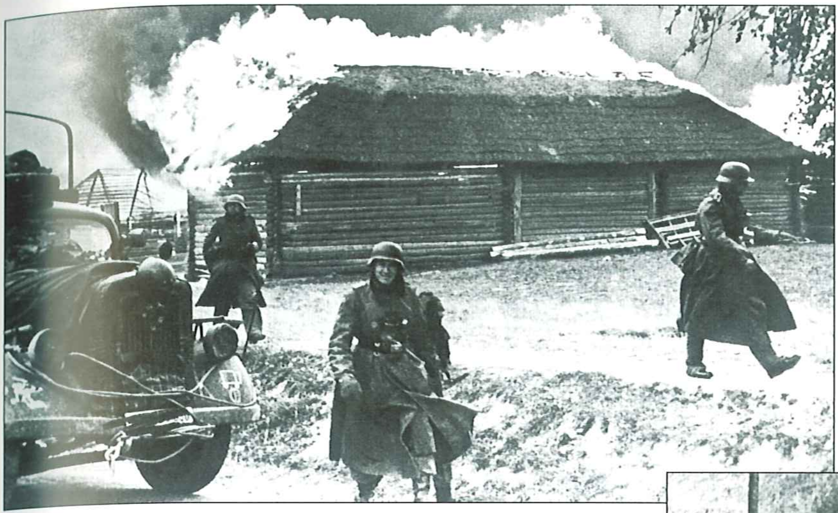


The most common truck of its class in the Wehrmacht up to 1941 was the medium Henschel 33 D 1 and 33 G 1, seen here leaving a garage in the winter of 1940/41. The tactical marking on the mudguard is for the 1st company of an infantry regiment.

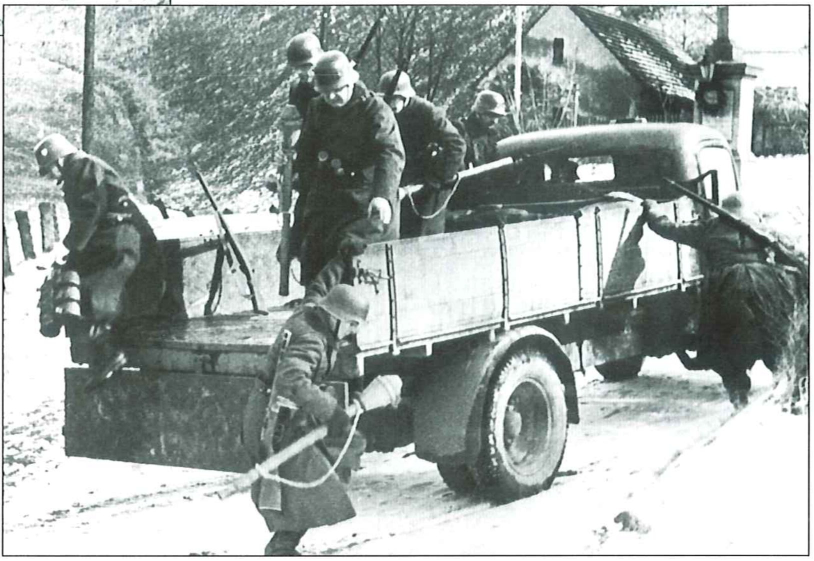


A Büssing-NAG 4500 gets some assistance back on to the road from an Sd.Kfz.9 heavy prime mover and a number of soldiers on a summer day in July 1941. This heavy truck probably belonged to the 7th company of the motorized infantry regiment from 3.Panzer-Division and carries unusual triangular width markings on the rear - they were more commonly white lines painted on the mudguards or body. Note the Hauptfeldwebel - der Speiss - in the foreground. Surprisingly, an officer also lends a hand - on the right wearing cavalry issue trousers.

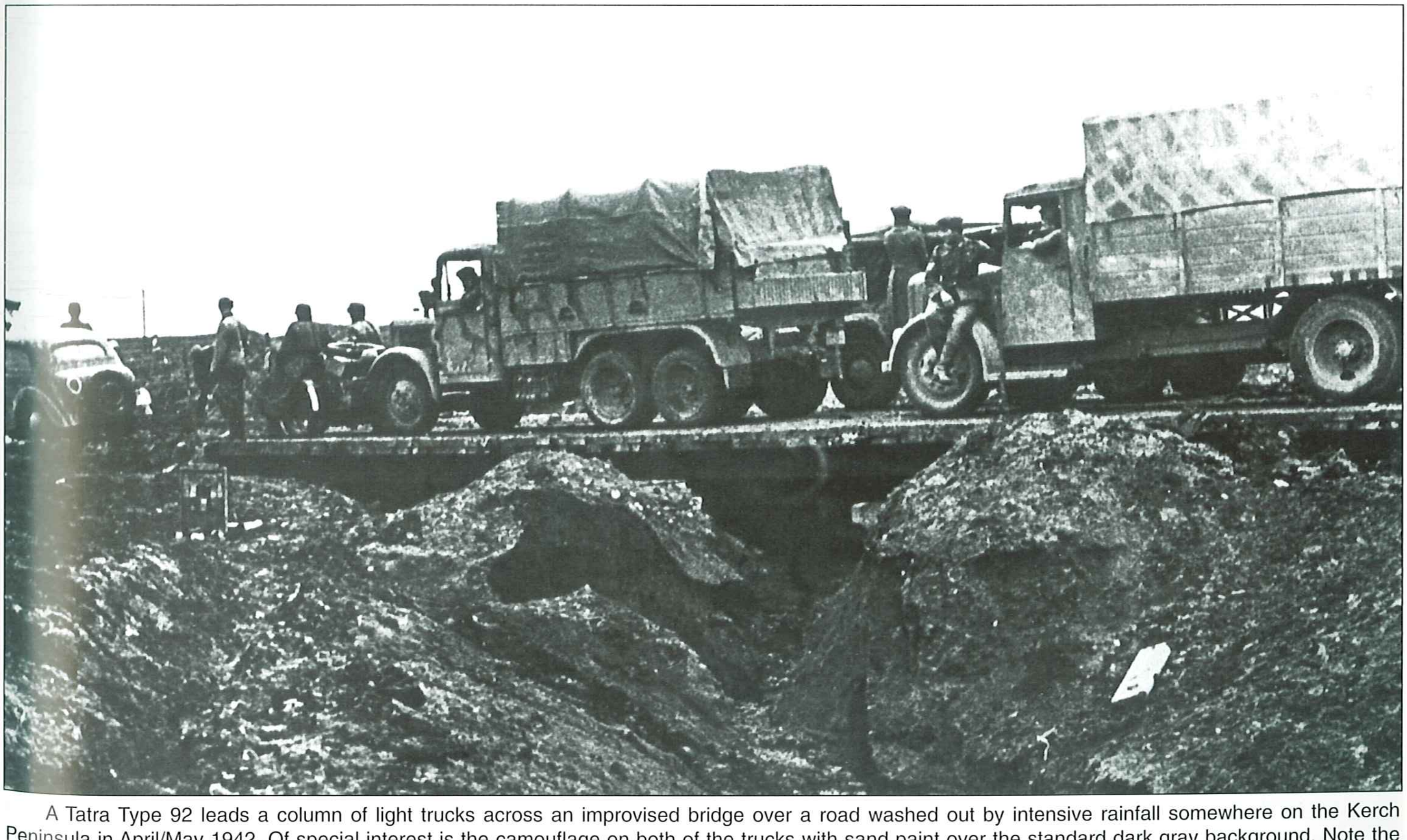
The hapless drivers of these two Ford trucks in the foreground, drove over mines which resulted in the complete destruction of their vehicles. Following drivers have abandoned the road in favor of the adjacent field. Notwithstanding the losses to Soviet artillery shelling and bombing of German supply routes, most of the losses to support vehicles of the Wehrmacht in the summer and autumn of 1941 were caused by wear and tear from poor quality roads.



The scorched earth policy was first introduced by Stalin in 1941, but the Germans used it too, later in the war, when they were forced to abandon territory in the Soviet Union. Here a group of German soldiers passes near a burning village somewhere in the Moscow area, where 11.Panzer-Division pushed back Soviet troops during the October offensives. The truck at left is the famous Opel Blitz, the radiator of which is decorated with a horseshoe and a Soviet helmet, while the mudguards carry an array of markings. On the left is the unit's "ghost" emblem with a small white "6" beside it. On the opposite mudguard is the tactical sign of the 7th company of a motorized infantry regiment in white with the tactical sign of 11.Panzer-Division in yellow below it.

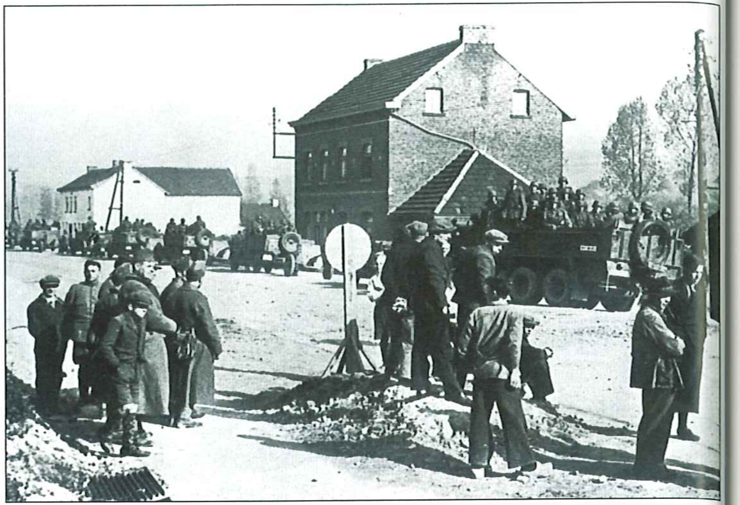


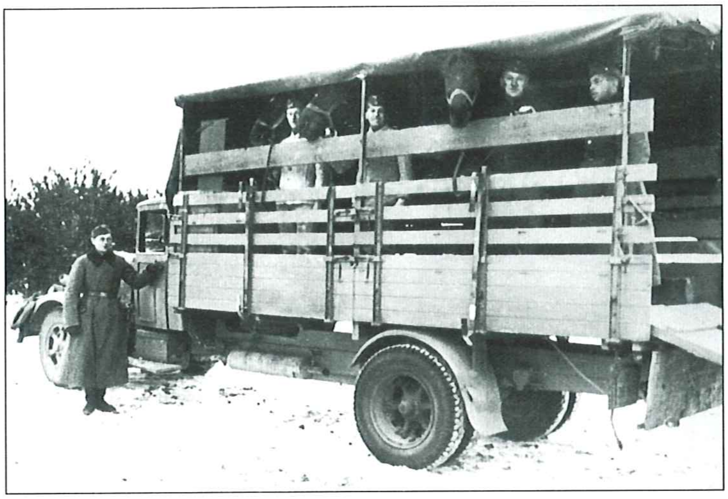
A Panzerjäger squad dismounts from an Opel Blitz truck somewhere in Eastern Germany on a sunny day in the winter of 1944/45. The dirty truck is almost certainly painted in dark gray and carries a white circular marking, seen under the arm of the soldier on the right. Of special interest is the varied armament of this 8-10 men squad, composed of rifles and Panzerfaust 60 with makeshift rope slings. The soldier in the foreground is equipped with a Russian PPSh submachine gun and the soldier jumping down from the truck on the left is carrying a rack of three 75 round saddle drums for the MG34 or MG15. The portly soldier with the M1916 helmet and grenades in his belt suggests these are second line troops.



A Tatra Type 92 leads a column of light trucks across an improvised bridge over a road washed out by intensive rainfall somewhere on the Kerch Peninsula in April/May 1942. Of special interest is the camouflage on both of the trucks with sand paint over the standard dark gray background. Note the first truck has a camouflage pattern painted over the body while the second truck has it applied only on the canvas top.

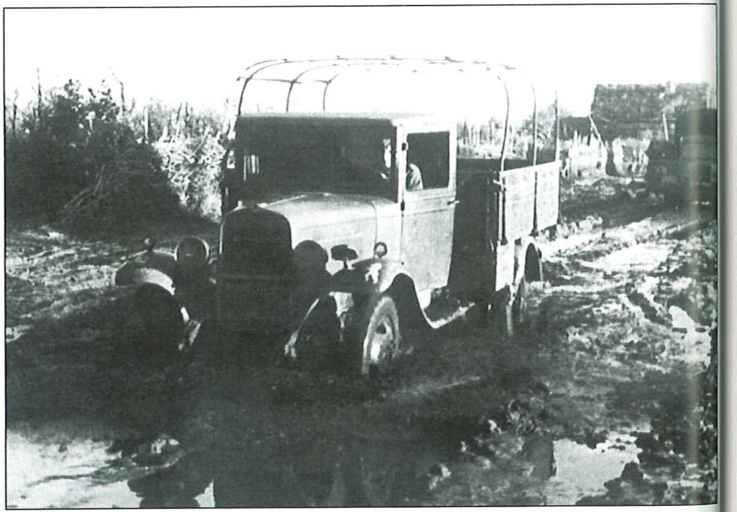
A Henschel 33 D 1 3-ton truck following a column of, what appears to be, Ford 917T trucks from an anti-tank company armed with the 3.7cm PaK 36 anti-tank gun, Balkans, 1941. These type of gun tractors were quite rare in the Wehrmacht but were seen in many anti-tank companies in the early war period. Note the license plate located on the side of the truck loaded with infantry, typical for trucks in the mid 1930s.

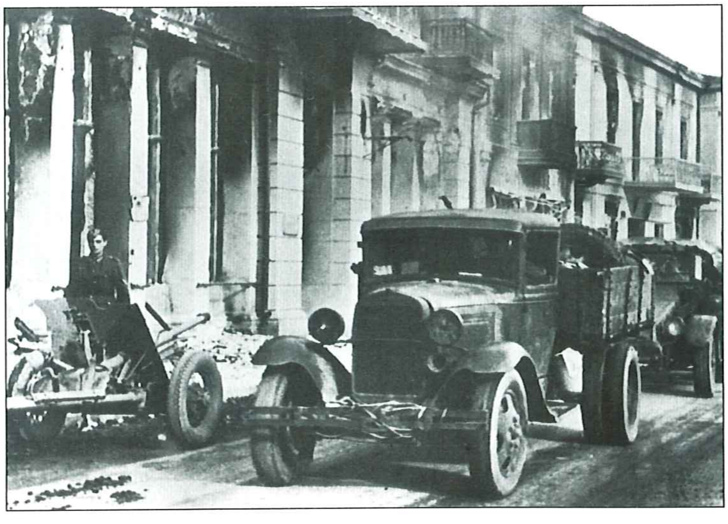




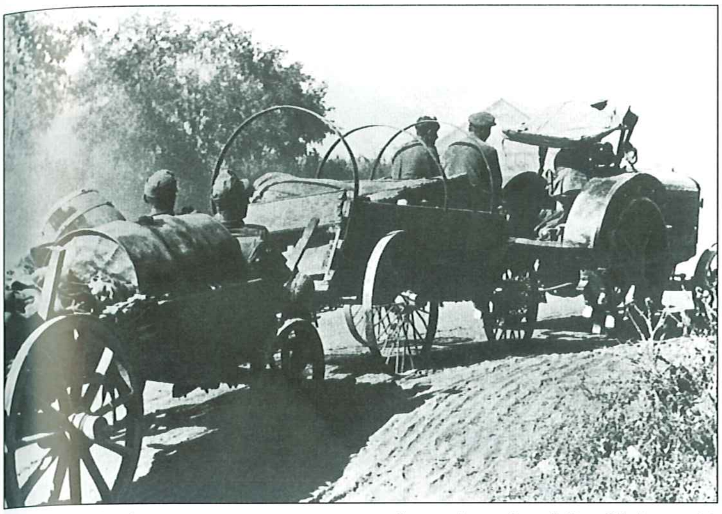
A MAN or Borgward 3-ton medium truck specially modified for horse transport on long marches. The animals were loaded from the rear on a special ramp. The vehicle could transport up to six horses but were best when limited to five. It is painted in overall sand which would indicate the photo was taken after the fall of 1942 although the off white fatigues the two men standing on the left are wearing had been discontinued in 1940.

The Germans often used captured Soviet trucks due to the chronic shortage of vehicles to replace those lost through combat and breakdowns. Here is one of the captured soft-skins, a ZIS-5 light lorry which has the emblem of 3.Panzer-Division painted on its left mudguard. There is an illegible tactical sign painted on the other mudguard. The color is difficult to determine because they were sometimes repainted with the standard German dark gray, but were also often left in their original color of dark green. Note the rather modern looking trailer on the left.

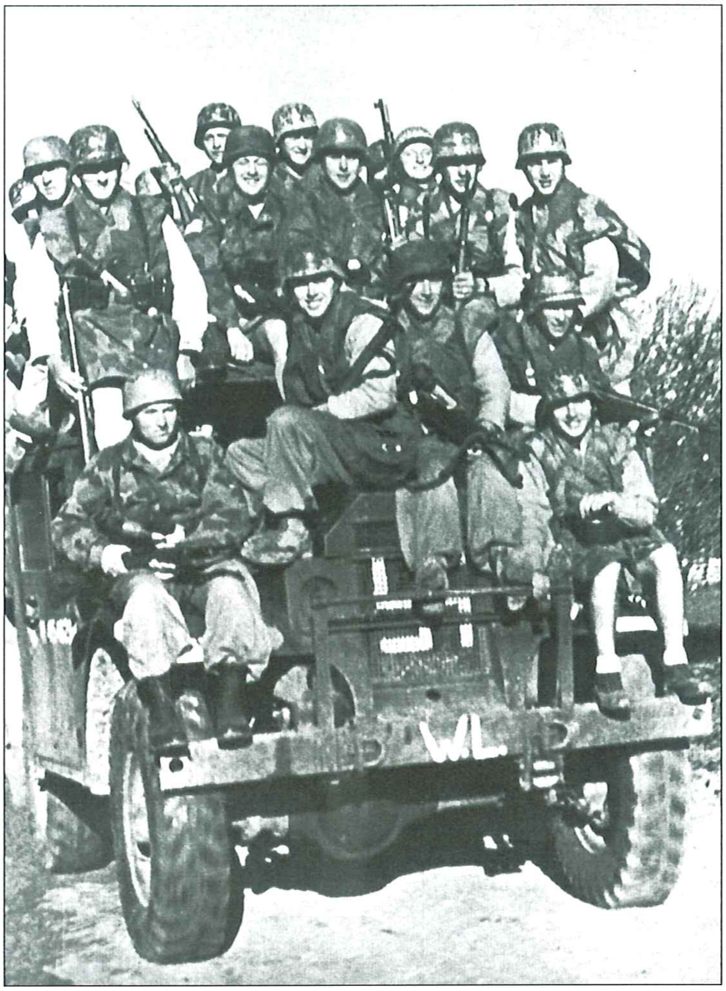




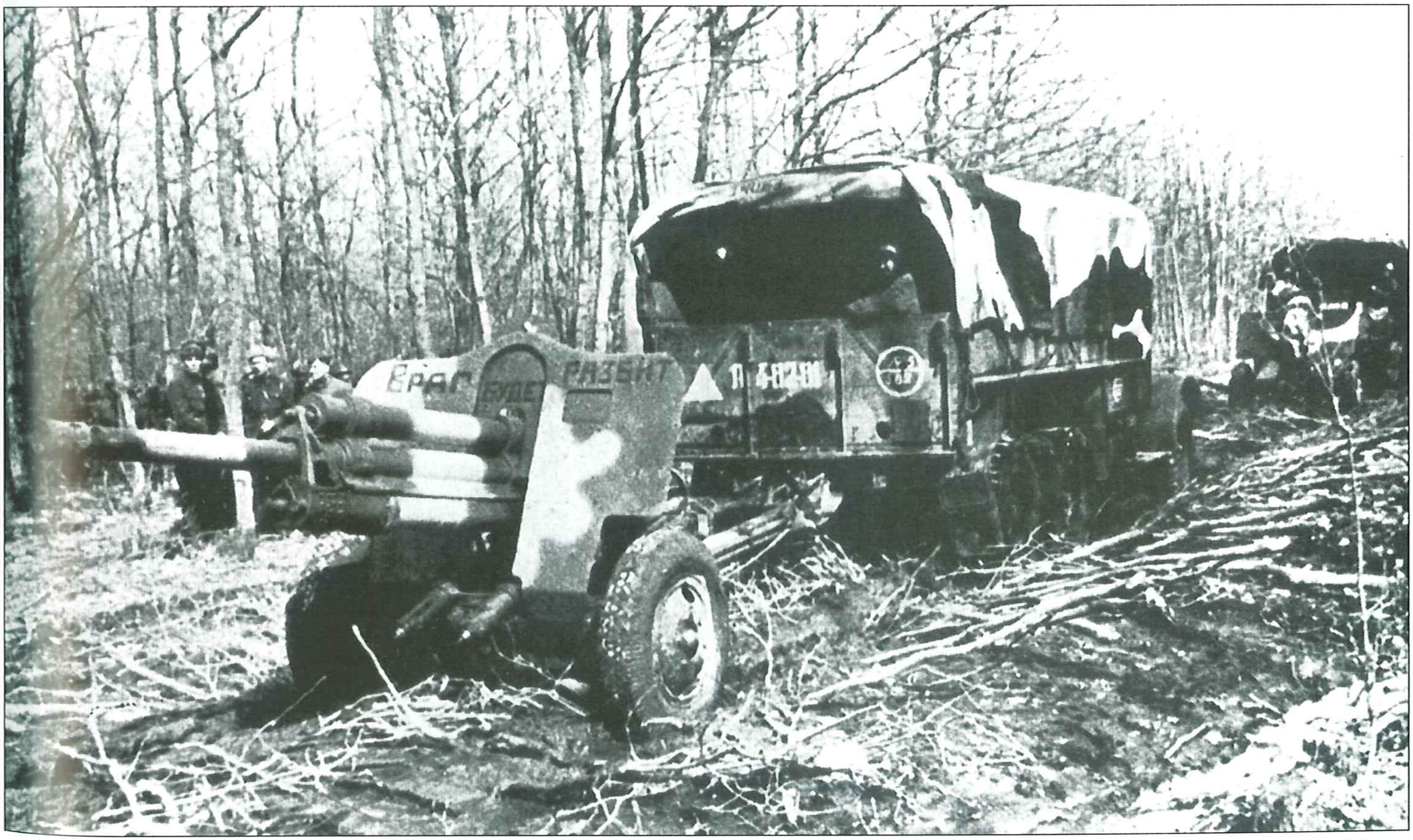
Another shot with captured trucks which were put into German service. This time the ZIS truck didn't receive any new markings, which is understandable, as the Krupp Protz seen just behind has no markings either. To the left of the captured truck, another piece of captured equipment is seen - a 45mm Model 1937 anti-tank gun which was similar to the 3.7cm Rheinmetall gun. The Germans impressed it into service under the designation 4.5cm PaK 184/1 (r). The truck as well was not an original Soviet design and had been produced all around Europe and in the Soviet Union under license to Ford in the U.S.



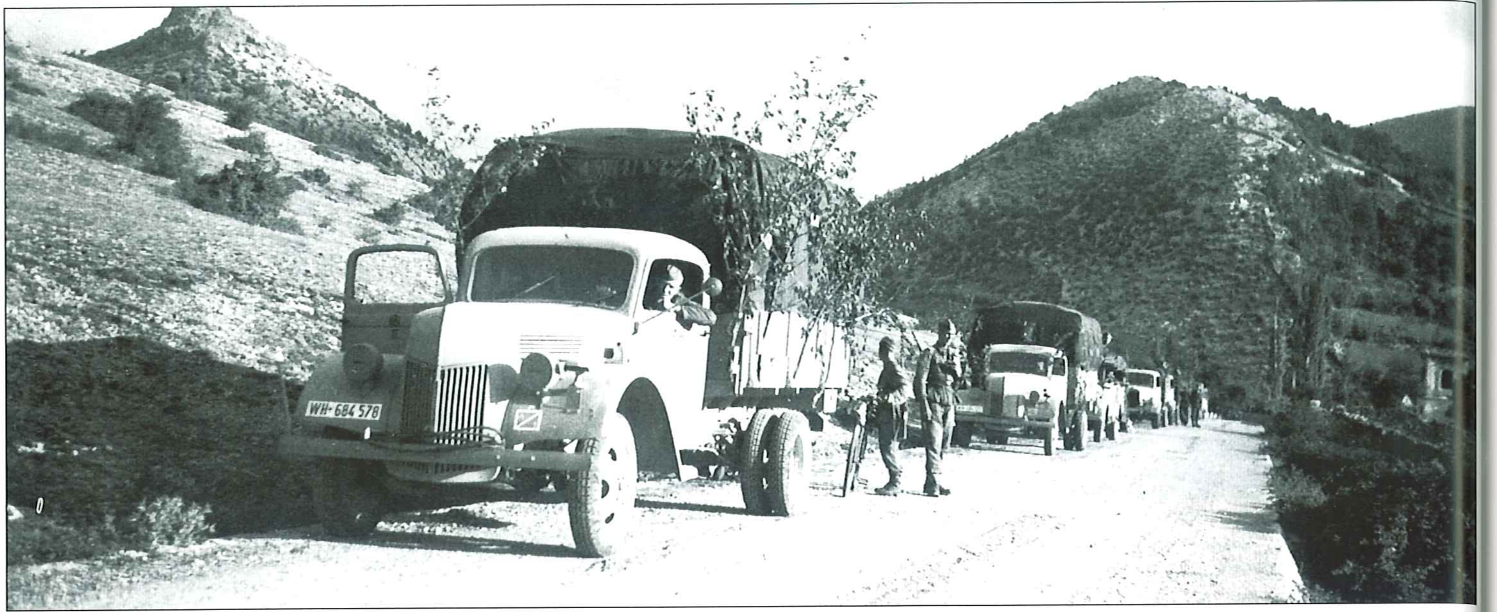
This is the way many transport and supply units of the Wehrmacht ended up in the Soviet Union after their equipment was destroyed or worn out through months of arduous operation across the fields and roads of this country. The Germans confiscated most equipment found in Soviet villages and towns, not only fully tracked tractors, but also such primitive tractors and wagons as that seen in the photograph. They were incorporated into the divisions in many ways, formally and without permission, to make the long marches as comfortable as possible.



A group of Fallschirmjäger from Division Hermann Göring travelling in Tunisia on a captured Canadian made Chevrolet gun tractor marked with a swastika on the radiator to indicate the nationality of its new owners and "W.L." on the bumper for the branch of service. All the soldiers are wearing tropical uniforms with splinter pattern camouflage smocks or zeltbahn shelter quarters over them. Most of them wear the standard M1935 helmet with sand camouflage paint although one has a camouflage cover. The man at the left front has the standard paratroop helmet as well as the man in the center near the rear who also has a camouflage cover as well.



On the other hand, the Soviets used captured German trucks which fell into their hands after the Germans began to retreat. Here we see one of these vehicles, a Henschel 33 G 1 employed by the Soviets for gun towing duties in 1943. Note the camouflage pattern which is Soviet in origin. The slogan on the 76.2mm ZIS-3 gun says "Enemy shall be smashed". The unit code painted on the truck is L4-82-81 with a tactical marking to the right of it.

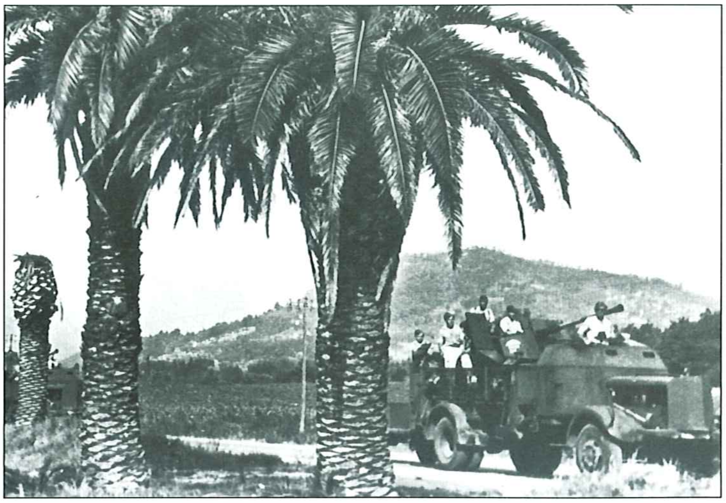


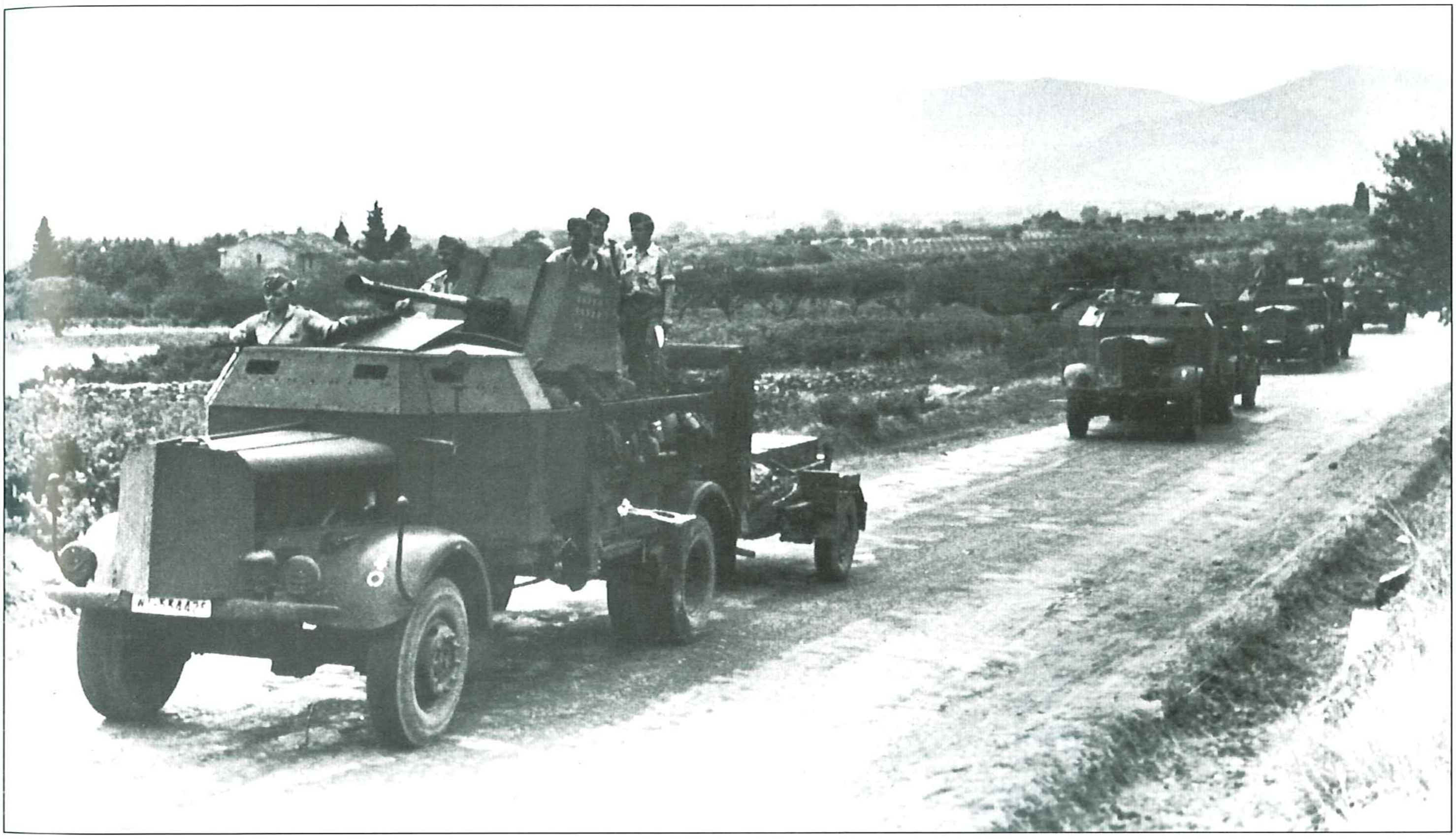
The Ford V3000S 3-ton truck was one of the more common in the German Army and, together with the Opel blitz, was the backbone of transportation within the Wehrmacht divisions. Here are two of the Fords photographed in Southern Italy in September 1943 during a rest stop. The two leading trucks are new and carry a clean coat of overall sand paint with a complete set of markings. There are tactical markings and a shipping stencil painted in black on the driver's door while on the front of the mudguards, the white license plate, WH-684578, and tactical sign of the 1st company of an infantry reconnaissance battalion are also painted in white.

A Phanomen-Granit 1500A ambulance is racing down a road somewhere in the Monte Cassino area to escape allied artillery fire which very often opened up at any target that presented itself. The demolished landscape shows that the driver has reason to be afraid. The Phanomen-Granit 1500A was probably the most common ambulance vehicle in the Wehrmacht due to its light weight, high speed and maneuverability.

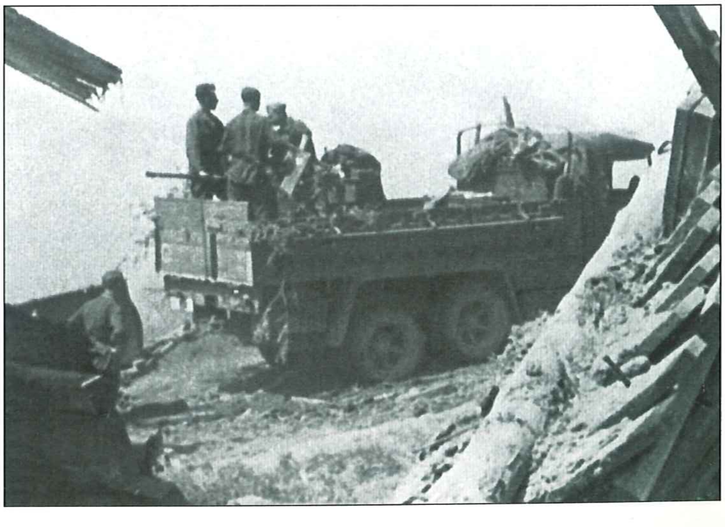
A Phanomen-Granit 1500A ambulance with small Red Cross markings seen in Prague during the last days of fighting in May 1945 was not so lucky. There are tactical markings on the back door but they are obscured by other markings painted over them. Ambulance vans usually carried a basic coat of overall sand paint without camouflage patterns added. The Red Cross markings are rather smaller than those usually found. All standard ambulance vehicles of the Wehrmacht were light trucks and classified as Kfz.31.

A battery of 3.7cm FlaK 36 anti-aircraft guns installed on the Mercedes-Benz L4500A truck with armored cab. Very few of these were built. The combination of the medium anti-aircraft gun and the heavy class truck (4500 means 4-1/2 ton) produced a very good vehicle which could be successfully deployed by flak units thanks to its mobility and fire power. Note the victory markings painted on the gun shield of the leading vehicle which indicates the number of aircraft shot down and a bunker destroyed.

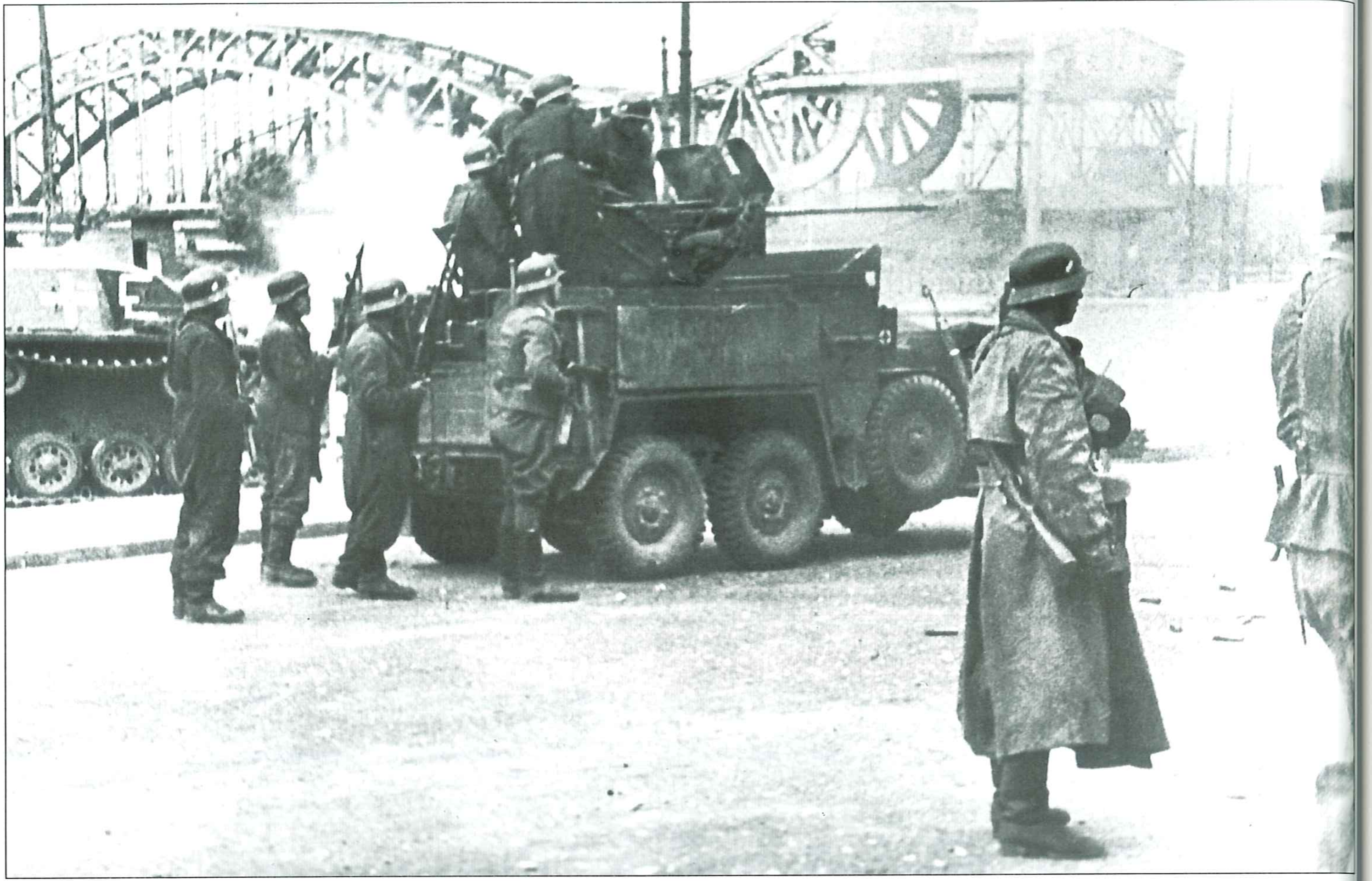




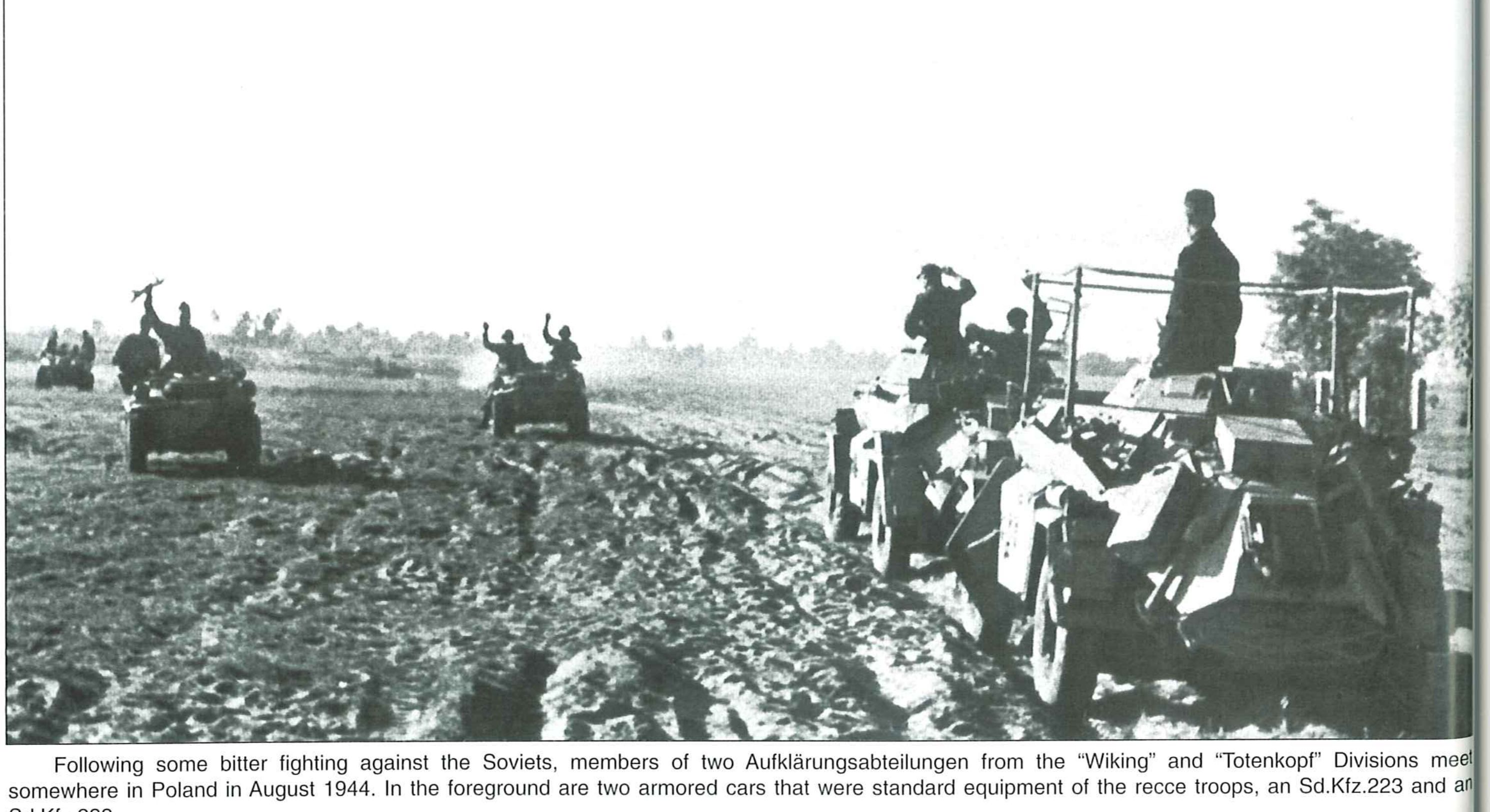
A close up of a Mercedes-Benz L4500A flak truck which shows the tactical markings painted on the mudguard. The circle indicates the troop and the number indicates the vehicle within the troop (1-6). The license plate shows WL-554425 in black on a white background. The victory markings on the gun shows 12 aircraft shot down and 1 tank destroyed. All of the trucks have a dark gray paint finish.



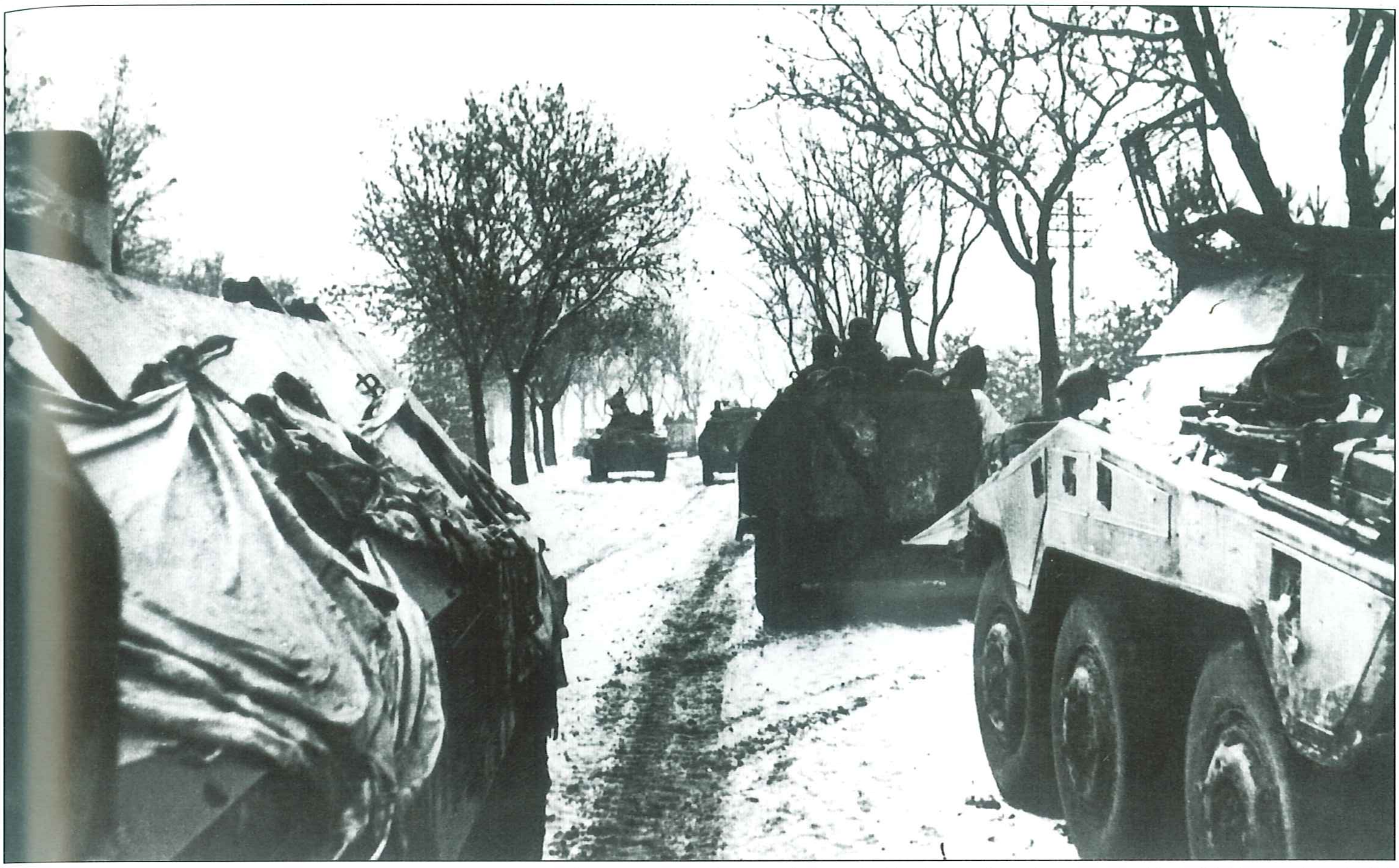
Anti-aircraft gun installations on medium trucks were rather rarely seen and usually such combat vehicles were improvised at the unit level on various light trucks. But here, another type of truck is employed for this purpose, a Henschel 33 G 1 medium truck with a trailer and a light 2cm FlaK 38 gun fitted in the extreme rear part of the cargo compartment. The photo was taken in the Stalingrad area in October 1942.



A Krupp Protz fitted with a 2cm FlaK 38 supporting a Sturmgeschütz Abteilung in a Lithuanian city during the summer of 1941. It was a very rare modification of the Protz. The FlaK 38 was mounted on special supports installed in the standard body of the Kfz.81, usually utilized for the gun crew and ammunition. The first such anti-aircraft vehicles were put into service in 1941 along with similarly modified Horch cross-country cars. The StuG.III Ausf.B or C in the background has an unusual marking painted on the side in front of the national cross. The Luftwaffe troops in the picture are wearing the standard Fliegerbluse, which was cut shorter than the standard army tunic, and the one piece dark blue-gray or black twill fatigue uniform. The soldier second to right is wearing a motorcyclist's waterproof coat.

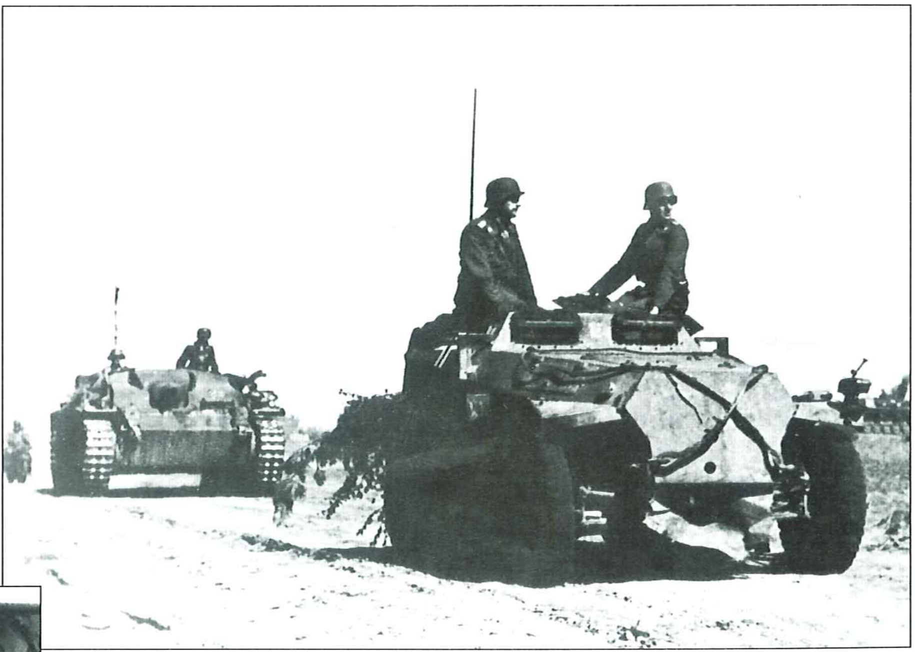


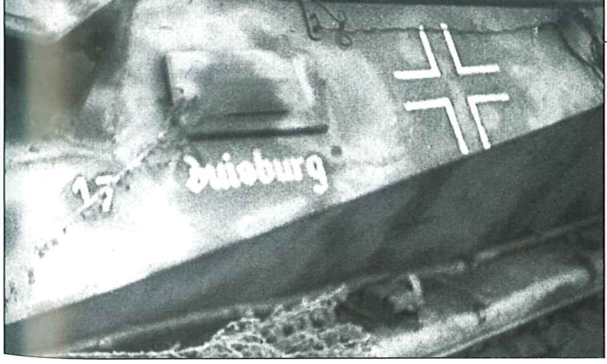
Following some bitter fighting against the Soviets, members of two Aufklärungsabteilungen from the "Wiking" and "Totenkopf" Divisions meet somewhere in Poland in August 1944. In the foreground are two armored cars that were standard equipment of the recce troops, an Sd.Kfz.223 and an Sd.Kfz.222.



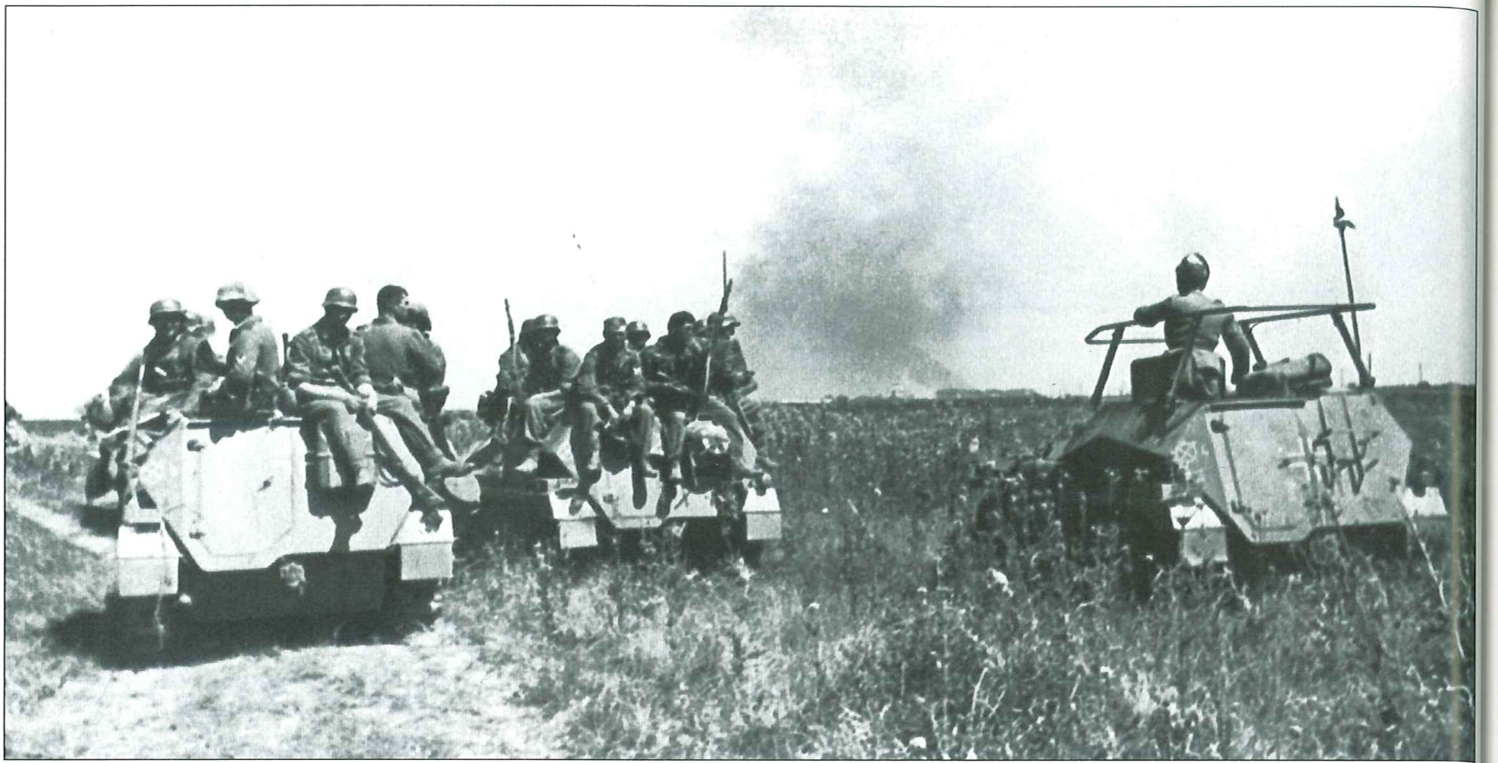
A column of German armor traverses snowy terrain east of Breslau in early 1945. It is probably the leading element of a Pz.Aufkl.Abt. equipped with Sd.Kfz.251s and Sd.Kfz.234/1 reconnaissance vehicles, one of the rarest vehicles used by the Panzerwaffe in the last year of the war. Breslau was encircled and by-passed by the 1st Ukrainian Front, which overran Lower and Upper Silesia and joined in the Battle of Berlin. Breslau surrendered on May 6, 1945.

The Sd.Kfz.253 was the half-track command vehicle for platoon commanders in StuG. Abteilungen and was built on the chassis of the Demag D7 Sd.Kfz.10 light prime mover. The first of them were available to the Wehrmacht in the spring of 1940 and production continued until June 1941 when, after the last of 285 vehicles were delivered, production was diverted to the standard Sd.Kfz.250. Here, one of these armored observation vehicles, leichter gepanzerter Beobachtungskraftwagen as they were officially known, travels down a dusty road in the western Soviet Union in the summer of 1941 followed by a StuG.III Ausf.C/D. The vehicle has the standard dark gray paint scheme for this period but, unusually, it has no tactical markings or license plate.

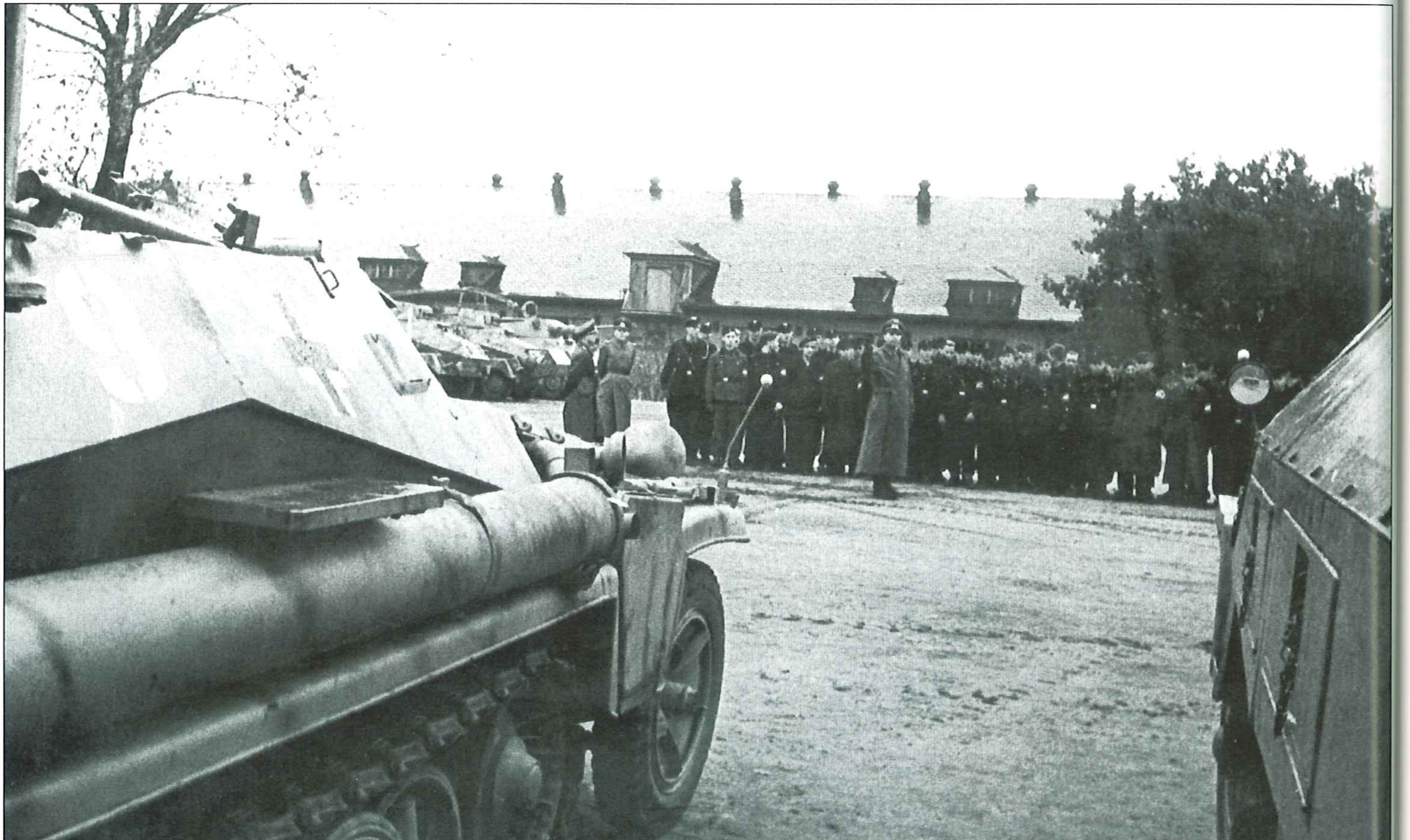




A closeup of an Sd.Kfz.250 knocked out by the Soviets during fighting in the Kursk bulge in August 1943. The vehicle is overall dark gray with a sand colored camouflage scheme and the personalized name "Duisberg" painted below the vision flap. To the left is the white vehicle number "17" painted in a smaller than usual size. By this time, the dark gray paint with green or sand camouflage painted over was rare since vehicles were being produced with a base coat of overall sand with a green or brown camouflage scheme applied at the factory.

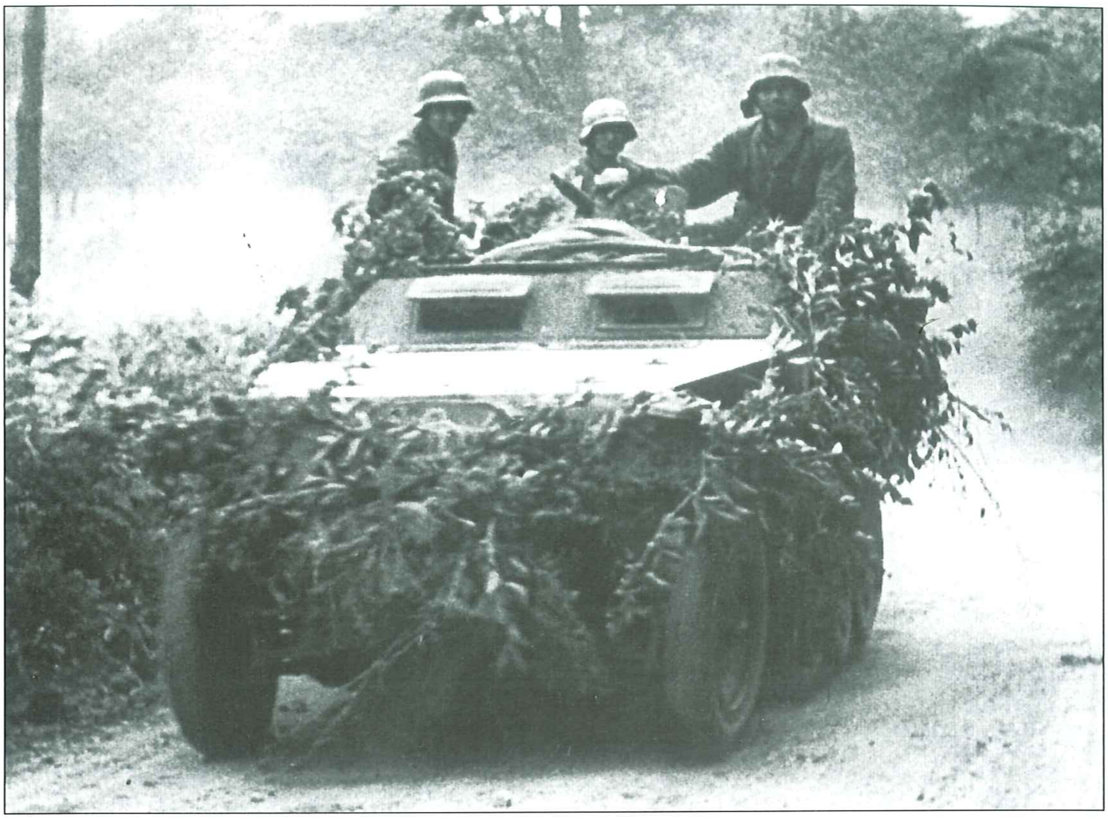


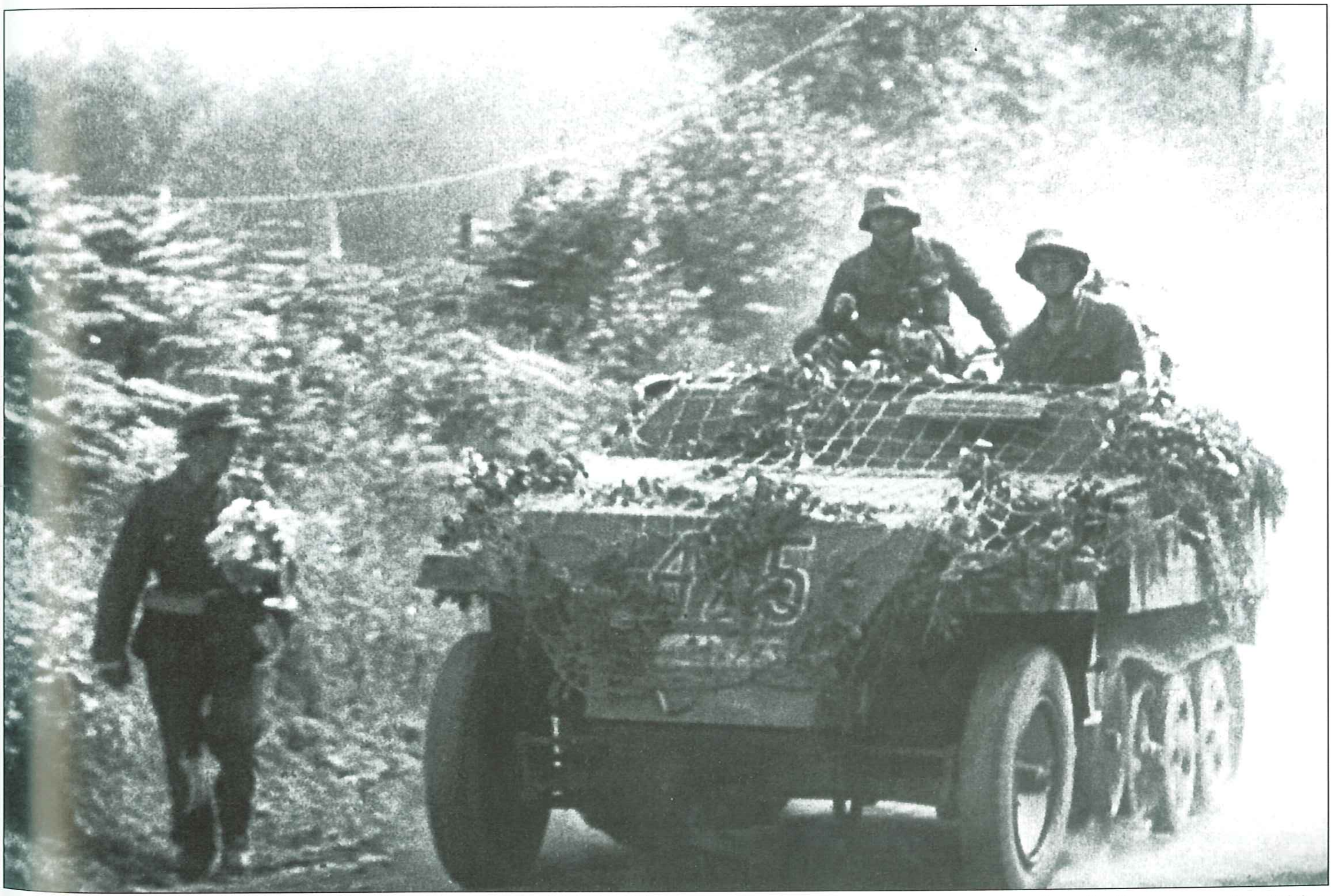
A trio of Sd.Kfz.250s in the Soviet Union photographed during one of the many battles fought across the Caucasian steppes in August 1942. All three vehicles carry national and tactical markings on the rear superstructure. The tactical sign indicates the 4th platoon of a motorcycle reconnaissance company. The standard Sd.Kfz.250/1 normally accommodated a squad of 4 men, but as we can see in this shot, very often the vehicles were used to transport as many men as possible, especially in the battle area. The APC on the right is an Sd.Kfz.250/3 radio vehicle equipped with a frame antenna and a command pennant attached to the rod antenna.



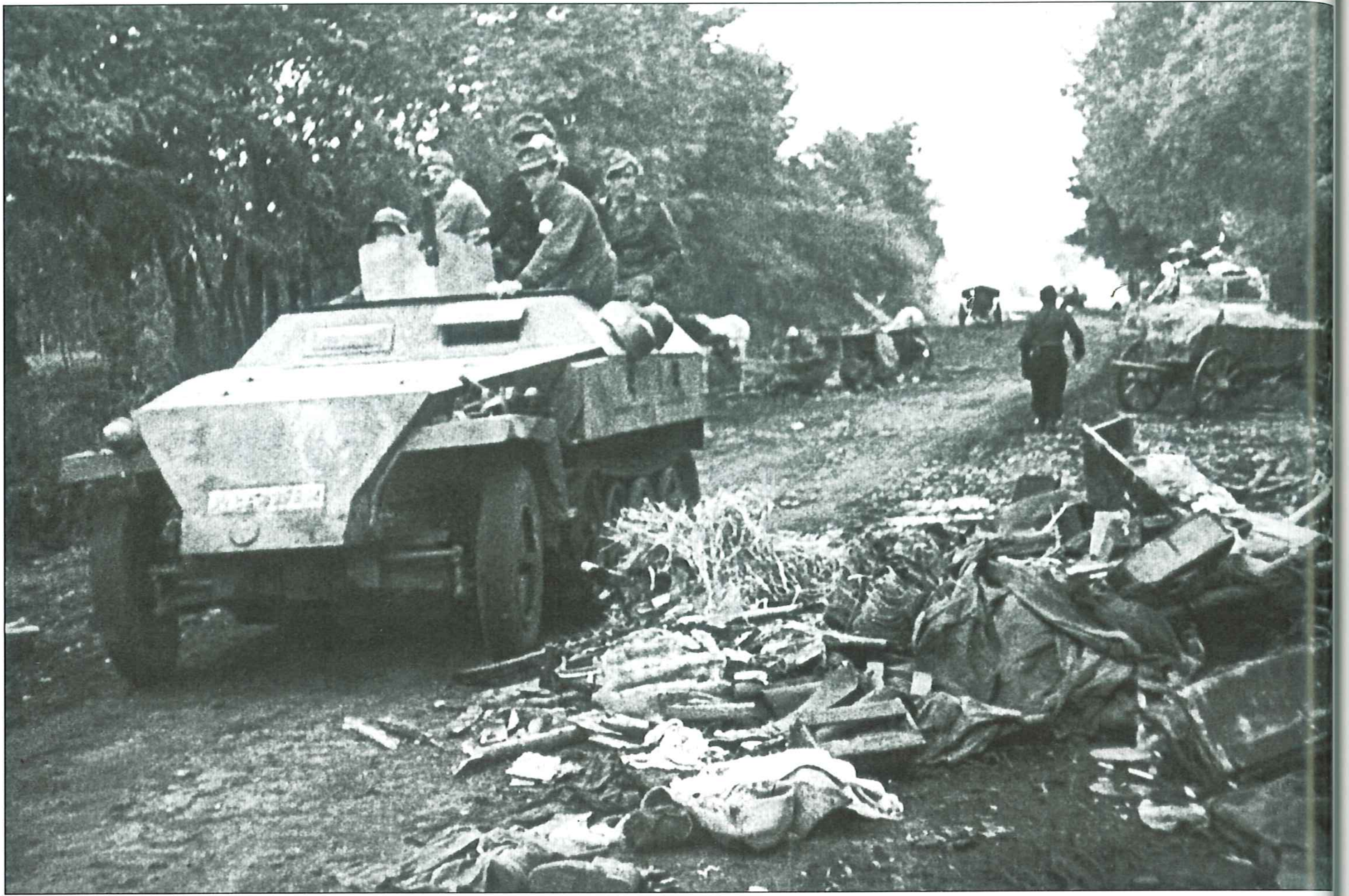
An instructor describes to future soldiers of the Hitlerjugend, the vehicles used in reconnaissance units of the Panzer divisions on display at a kaserne in a Panzer troop school. At the left, part of an Sd.Kfz.250 "Alte Ausf." is visible while at the right an Sd.Kfz.251 Ausf.D can be seen. In the background, are three other vehicles, the 8 wheel armored cars Sd.Kfz.231, Sd.Kfz.232 and Sd.Kfz.234/2 "Puma" with 5cm gun turret. Some unusual features of the Sd.Kfz.250 are the large pipe, the purpose of which is unknown, with a step platform above it and the reinforcing spokes welded to the front wheel.

An Sd.Kfz.250/1 "Neu" camouflaged with foliage seen somewhere in Europe during the summer of 1944. The "Neu" version entered production in October 1943 and was built up to late 1944 when the last of almost 2,400 vehicles was accepted by the Wehrmacht. Within this year, German industry produced only about 200 more units than the previous year, even though the "Neu" version was simpler to produce than the "Alte" version of the Sd.Kfz.250.

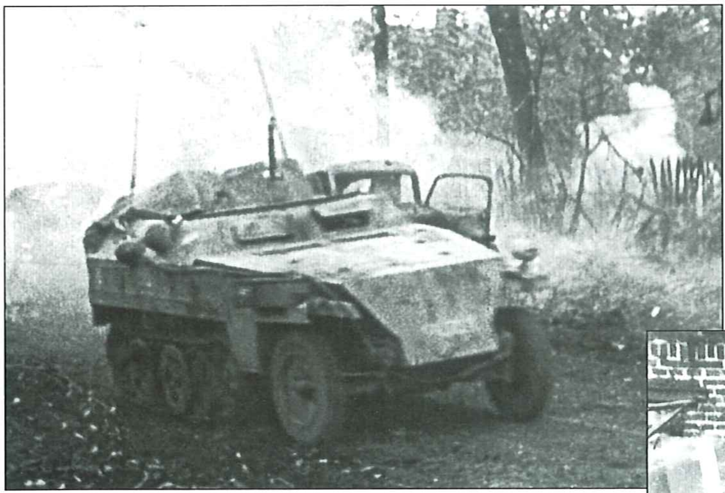




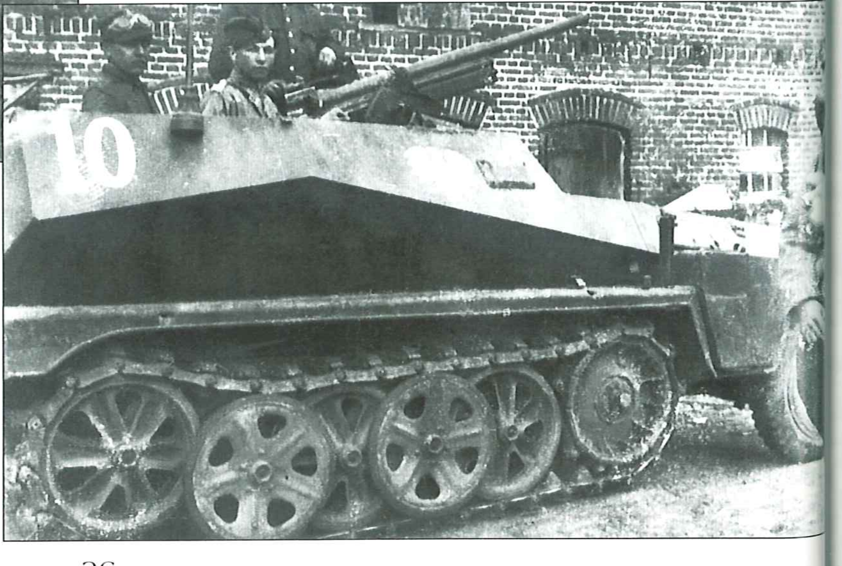
An Sd.Kfz.250/1 "Neu" heavily camouflaged with foliage and a camouflage net possibly from a reconnaissance battalion of a Panzergrenadier division organized with foreign volunteers, late summer 1944. Of interest are the oversize tactical markings painted on the front plate of the engine compartment which is rather unusual for German units. The numbers indicate the 5th vehicle in the 2nd platoon of the 4th company and were painted in black with a white outline. Markings like this were highly visible and provided excellent aiming points for enemy gunners. The vehicle has no MG installation or radio antenna. The soldier standing along the side of the road appears to be carrying - a bouquet of flowers!



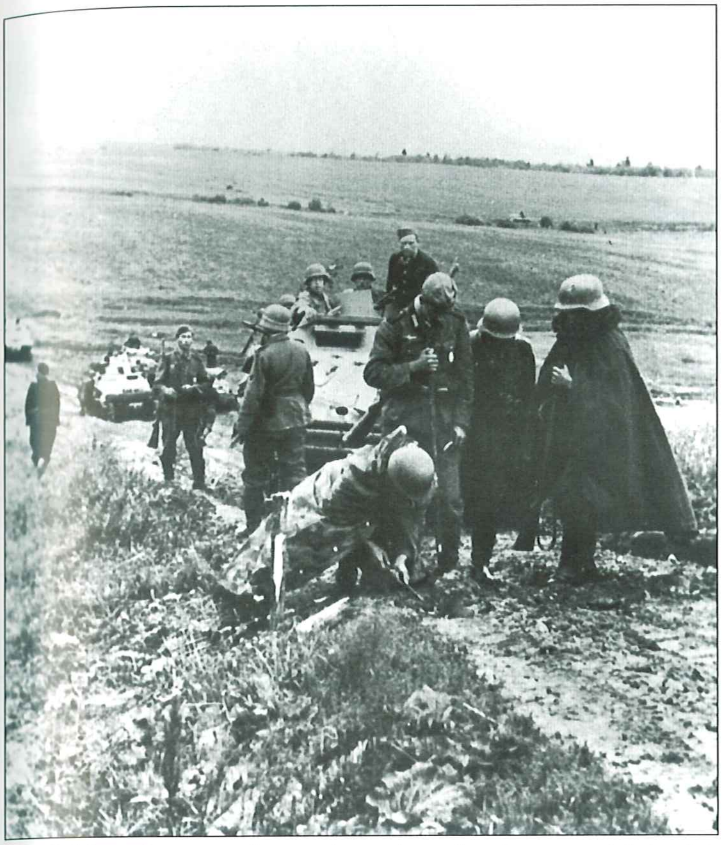
A lone Sd.Kfz.250/1 "Neu" of a Wehrmacht unit passes through the debris of a demolished caravan of German refugees somewhere in the Polish-Lithuanian-German border area in the autumn of 1944. The "Neu" version of the Sd.Kfz.250 was the same basic vehicle as the "Alte" version but with much simplified construction that makes it look like a completely different vehicle. The mudguard over the tracked part of the chassis was integrated with a stowage compartment and the fighting compartment and engine deck were widened.



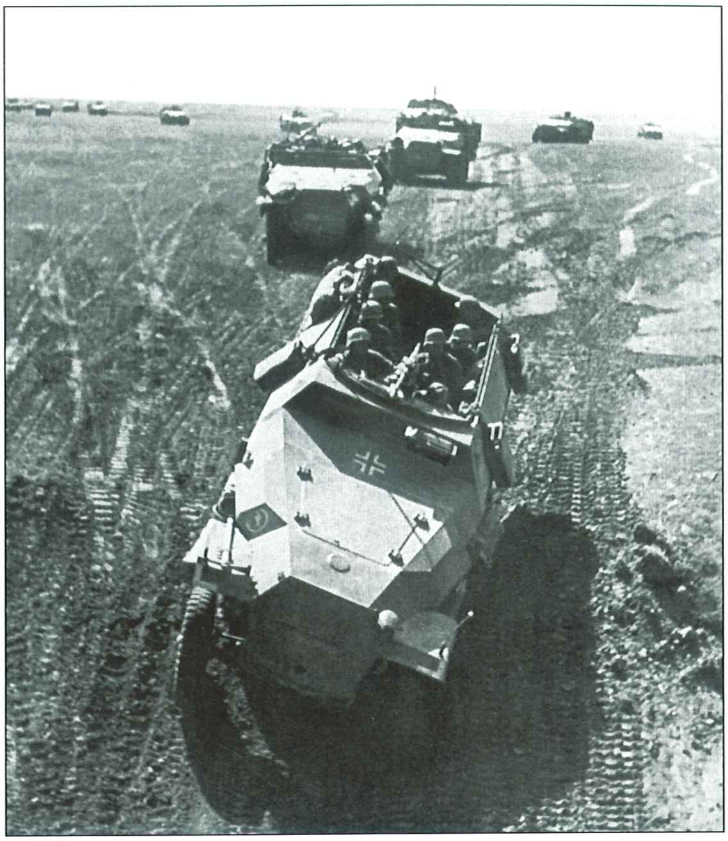
An Sd.Kfz.250/3 "Neu" radio communications vehicle races through a village near Goudap in Pomerania to avoid Soviet artillery fire. The 250/3 model was built in several versions and employed by different command levels for radio liaison duties linking them with the Luftwaffe and heavy artillery units. The main difference from the standard 250/1 model was the installation of FuG 7, FuG 8 or FuG 12 radios, which could be recognized by the long rod antenna installed on the left rear of the combat compartment. Here we have a vehicle with one of these antenna, while the one on the right side is for the standard Fu.Spr.Ger. F radio set carried by each vehicle.



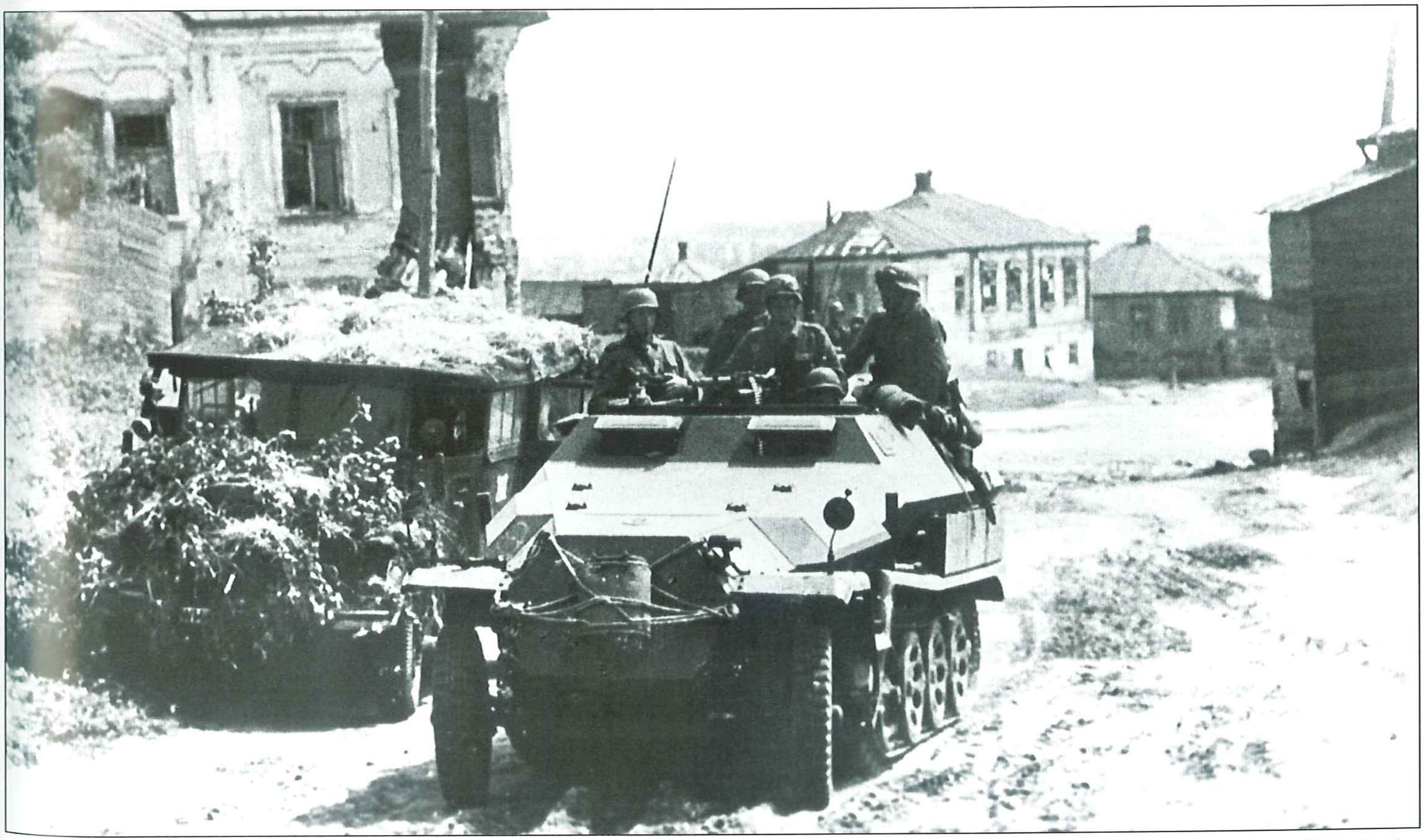
An Sd.Kfz.250/10 captured by Polish troops on the Eastern Front in early 1945 and incorporated into one of their Polish units. It appears to have been painted in the new two color camouflage, probably from Soviet made paints, but it is difficult to tell which colors were used. The 3.7cm PaK 36 gun shield was removed to make operation of the gun easier and improve observation. On the upper part of the superstructure sides, Polish markings have been added, including the Piast eagle national emblem.



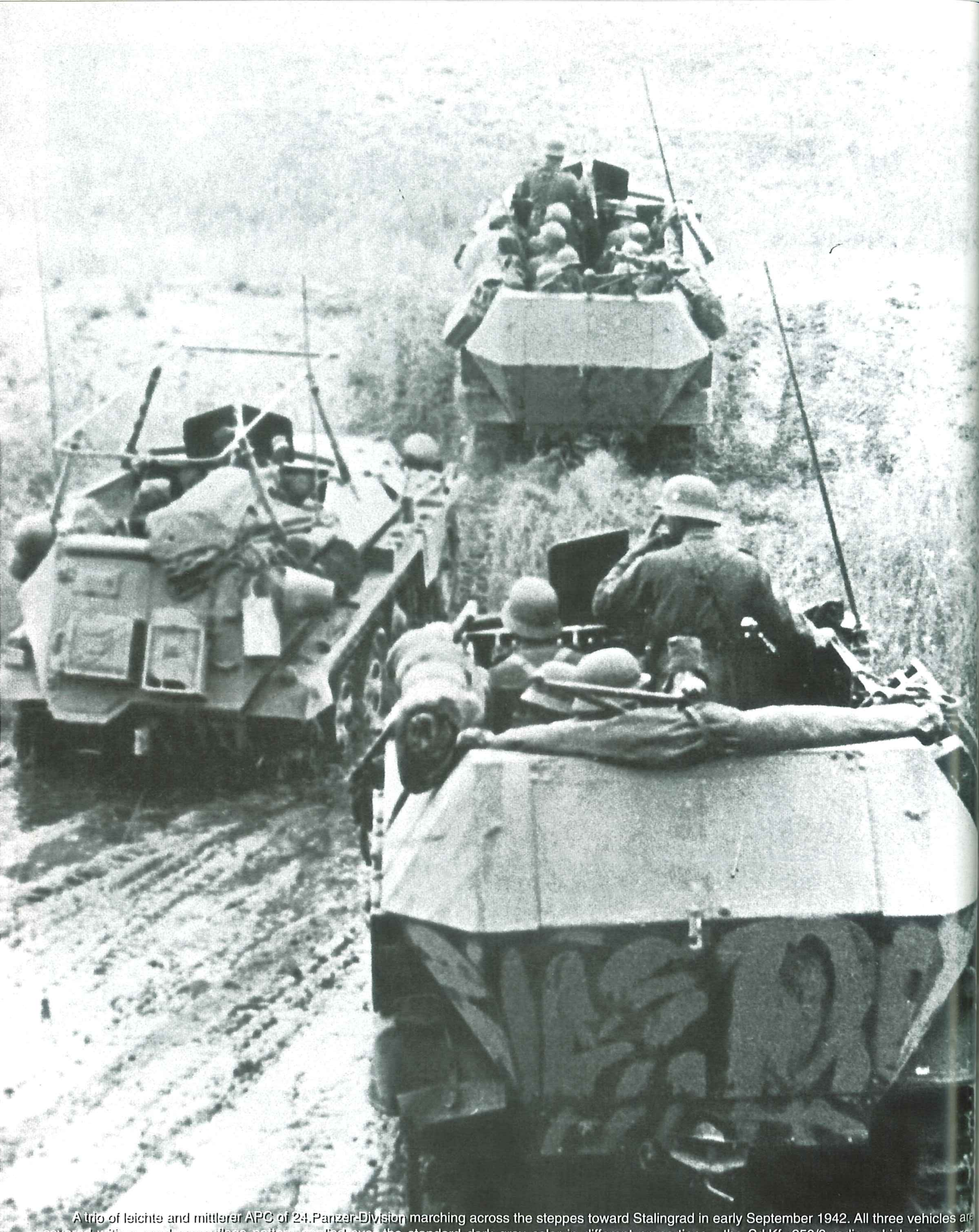
Soldiers of a reconnaissance troop clear mines from a road during the early battles in Russia in the summer of 1941. The Sd.Kfz.251/1 partially visible behind the soldiers is either an Ausf.A or B which has been fitted with an MG shield. In the background is another one, armed with a 3.7cm PaK 36 anti-tank gun, the Sd.Kfz.251/10. Note the two nearest soldiers, one wearing a zeltbahn shelter quarter and the one standing, wearing a captured Soviet rain cape.



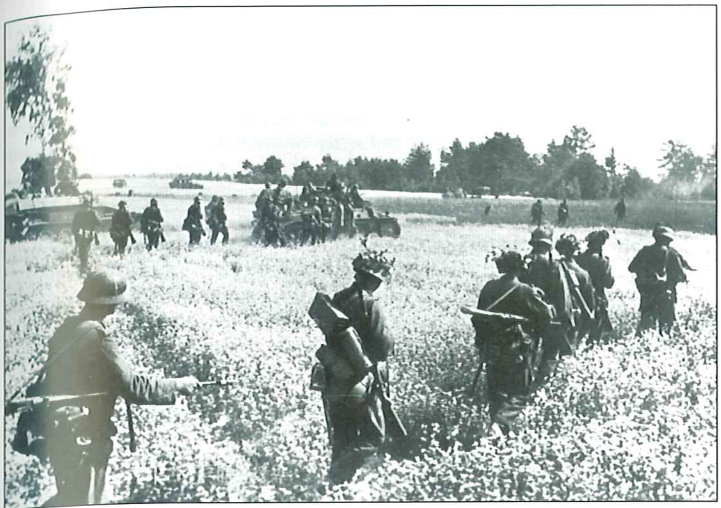
A perfect shot of an Sd.Kfz.251/1 Ausf.C not yet fitted with the MG shield, crossing a ditch on the way to Stalingrad in September 1942. The APC is covered in dust so its dark gray paint appears light, however the national cross and jumping horse emblem of the 24.Panzer-Division are clearly visible on the engine deck. As this photo shows, the Sd.Kfz.251 could carry up to 8 soldiers in addition to the driver and the commander of the APC.



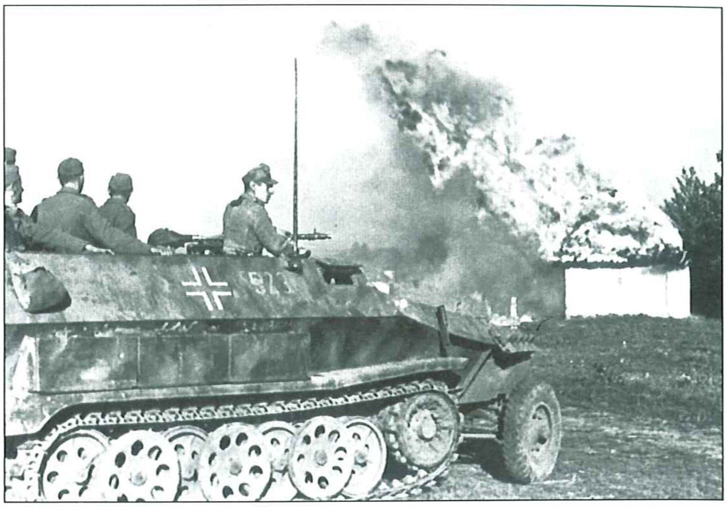
Another Sd.Kfz.251/1 Ausf.C of 24.Panzer-Division passing a Mercedes-Benz L1500A personnel carrier while travelling through a village in the Stalingrad area, early autumn of 1942. The divisional emblem and national cross are also visible on the engine deck as in the previous photo. Note the metal food container attached to the front plate with the tow cable and the lack of MG shield.



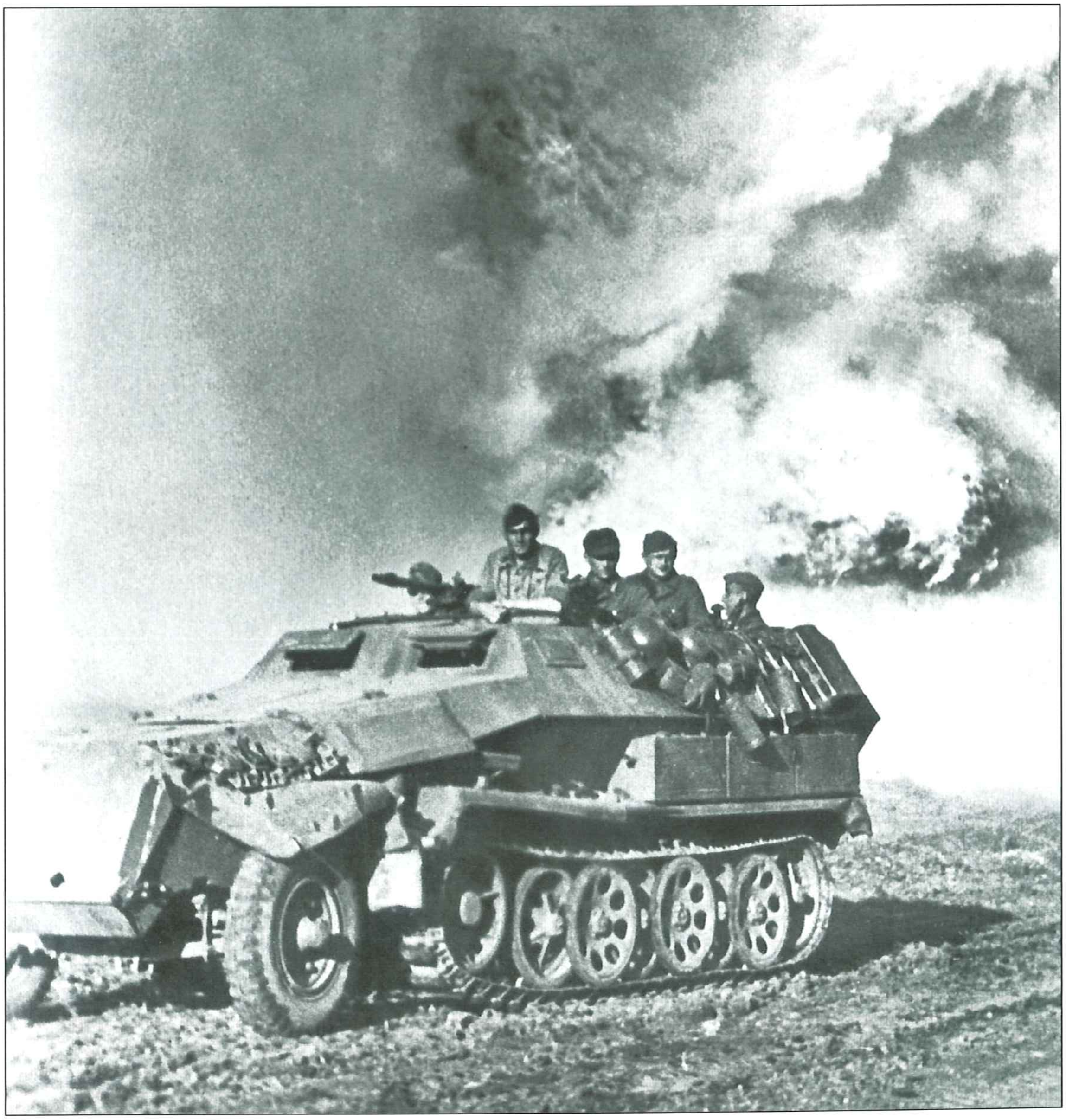
A trio of leichte and mittlerer APC of 24.Panzer-Division marching across the steppes toward Stalingrad in early September 1942. All three vehicles are covered with a sand camouflage pattern applied over the standard dark gray color in different proportions - the Sd.Kfz.250/3 radio vehicle is covered completely while both the Sd.Kfz.251/1s have only irregular spots. Note the unusual jerry can rack on the 250's rear door and the three different antenna The rod antenna on the left side was for the FuG 7 used to contact Luftwaffe support while the one on the right was for the Fu.Spr.Ger. F standard vehicle radio. The frame antenna was for the FuG 8 for main divisional communication.



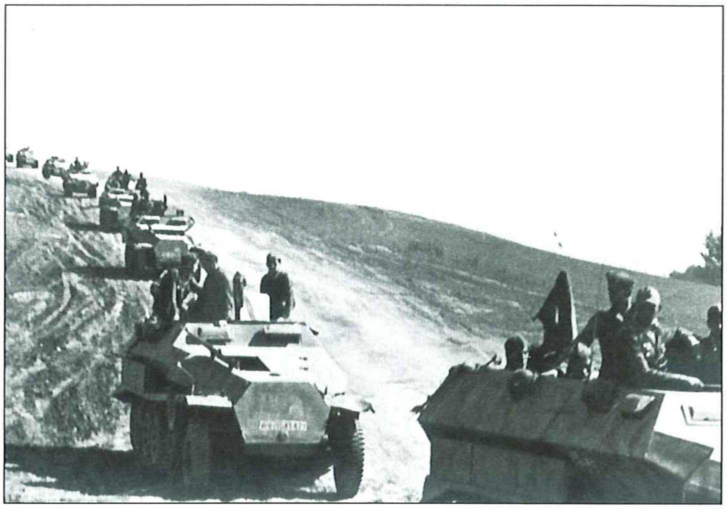
Squads of Panzergrenadiers march across a field in Russia supported by an Sd.Kfz.251 Ausf.B and a Pz.Kpfw.II loaded with soldiers. Note the APC in the background has additional stowage boxes mounted to the upper sides of the hull, including a very long one fitted between, what appears to be, two ammunition crates. Of special interest is the weapon the soldier bringing up the rear is carrying - a 7.92mm Panzerbüchse 38 anti-tank rifle, a rather rare weapon in the Wehrmacht.



Another burning farm passed by an Sd.Kfz.251/1 Ausf.C, again, without the MG shield and missing the mudguard on the front wheel. Of special interest is the camouflage and markings on this vehicle. The chassis is covered with dust and mud of course, but the rest of the vehicle has a dark green camouflage sprayed over the dark gray base. The tactical number is in yellow and is in the standard 3 digit configuration indicating the 3rd vehicle in the 2nd platoon of the 5th company. The rod antenna for the Fu.Spr.Ger. F radio was most commonly located as shown but was often located in the middle of, or rear end of, the side plate and sometimes tilted at an angle toward the inside of the vehicle.

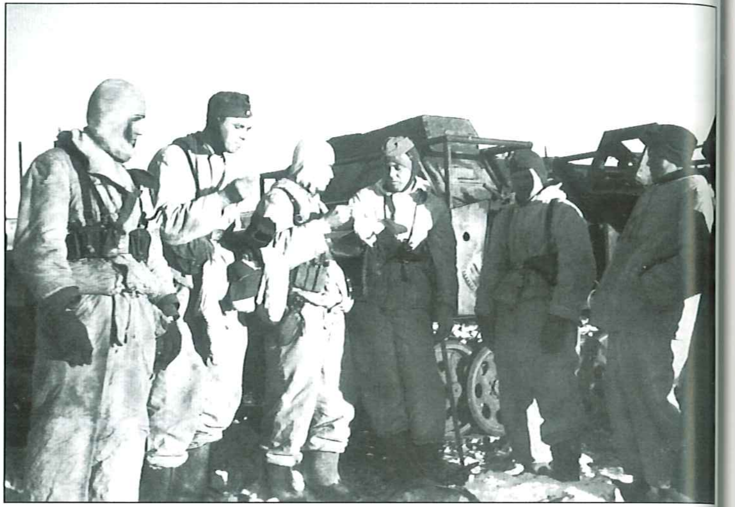


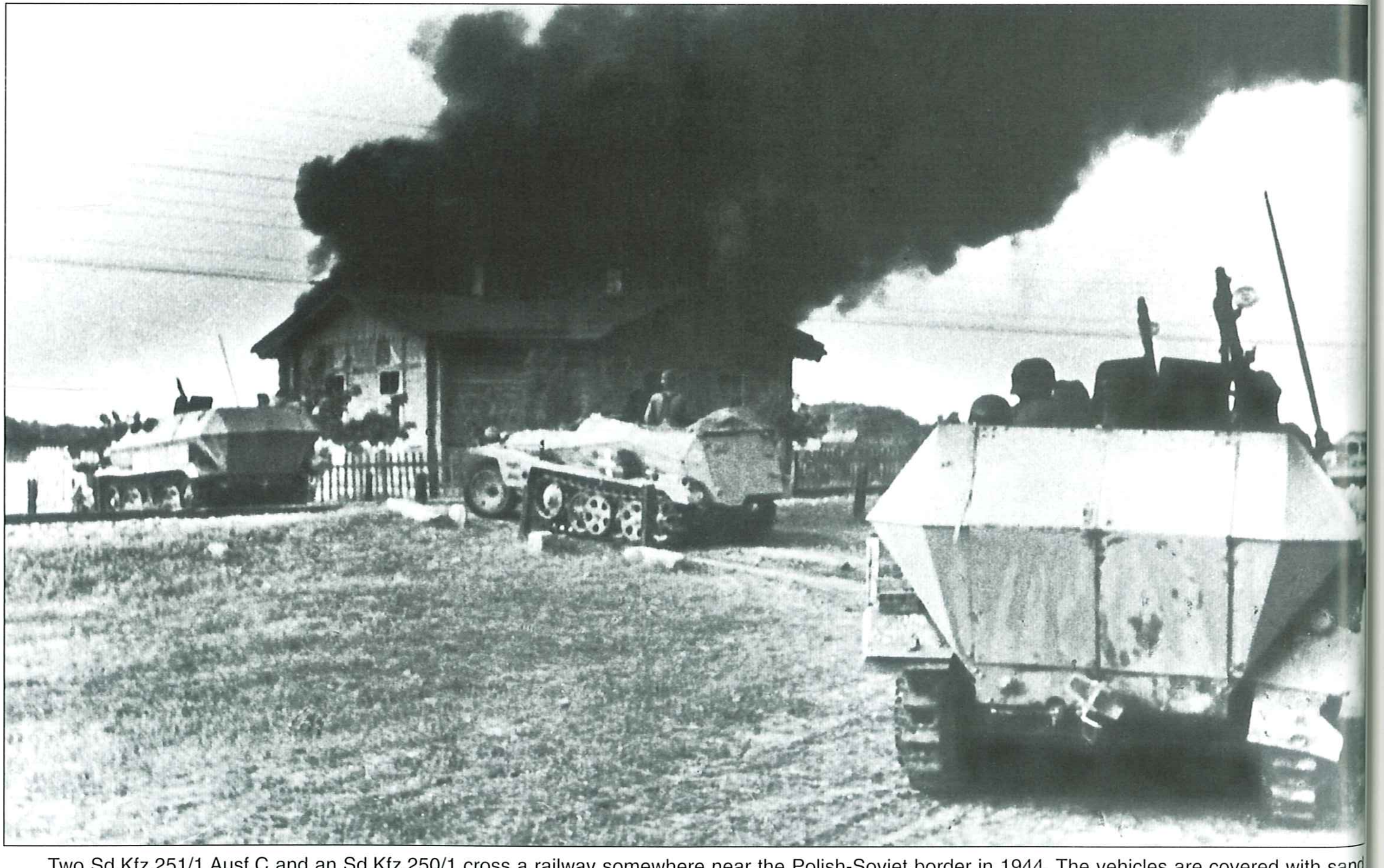
An Sd.Kfz.251/1 from a Panzergrenadier division travelling across a field somewhere in the Ukraine with a burning farmhouse in the background. Judging from the amount of personal equipment stored on the sides of the vehicle, this photo was probably taken during a lull between battles. The crumpled mudguard would indicate this crew has already been involved in some heavy fighting. This early Ausf.C lacks the MG shield.



A column of Sd.Kfz.251/1 Ausf.C from Panzer-Grenadier-Division "Großdeutschland" travelling down a road in the Ukraine during the retreats on the Eastern Front in the autumn of 1943. The vehicles are camouflaged with a two color scheme over the sand background and have open engine hatches for better ventilation. The second vehicle has license plate WH-1541471 above which, the faded out white divisional emblem can barely be made out. The vehicle in front has a black national cross painted on the side nearly as high as the upper hull side. Despite the large numbers of this APC produced, most divisions did not have enough to equip a whole battalion with. The Panzer division of 1943 had one regiment composed of two battalions, one equipped with APCs and the other with trucks. Theoretically, the armored battalion should have had all companies equipped with APCs, including special models armed with 3.7cm and 7,5cm guns for support, but only a few divisions were fully equipped.

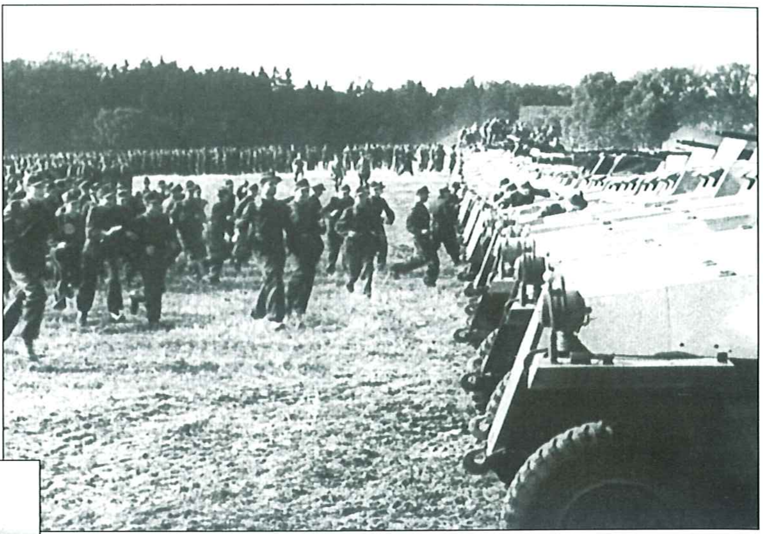
A short rest before resuming the march near Toropezh, December 1943. The vehicle in the background is an Sd.Kfz.251/1 Ausf.A or B fitted with racks for either 28cm high explosive or 32cm napalm "Wurfrahmen". The rockets were carried in wood or metal crates which were attached to adjustable metal plates fixed to a steel pipe frame on the sides of the vehicle. The APC is painted in dark gray with a camouflage pattern of sand or green painted over. Of special interest is the wooden crate on the roof to protect the crew in place of the MG shield. The crew are all wearing the two piece reversible winter uniform with felt and leather winter boots. The troops called this vehicle "Stuka zu Fuss", literally, Stuka on call.

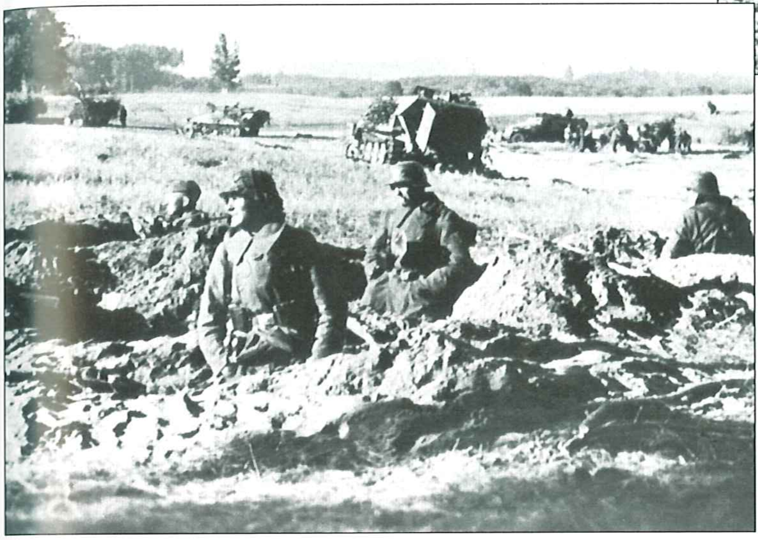




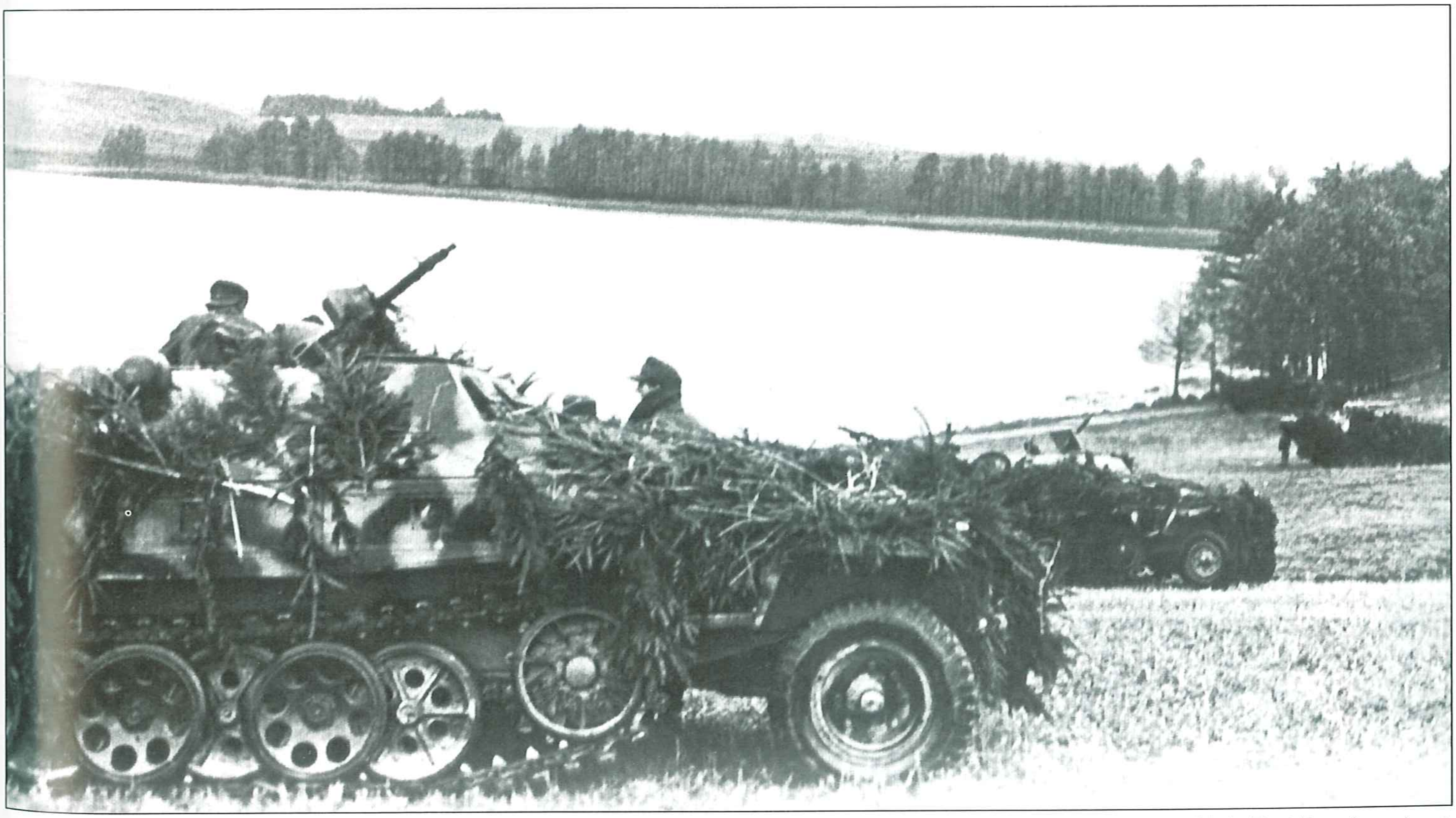
Two Sd.Kfz.251/1 Ausf.C and an Sd.Kfz.250/1 cross a railway somewhere near the Polish-Soviet border in 1944. The vehicles are covered with sand paint and the tactical markings are incomplete. Both APCs in the background have a white outline national cross painted on the sides and the 250 is carrying a jerry can with a white cross indicating it contains water. A tactical sign is barely visible on the angled plate to the left of the rear door. The license plates on the nearest APC are obscured by mud and dirt and it is equipped with an MG42 on the rear swing arm for anti-aircraft protection.

A company of Panzergrenadiers in the summer of 1944. The three color camouflage pattern is quite visible. Though not identical, the patterns are very similar and feature sharp, straight line borders. The APCs nearest the camera are Sd.Kfz.251/1 Ausf.D but in the background can be seen two Sd.Kfz.251/9 Ausf.D armed with the 7.5cm KwK 37 L/25 tank gun as well as another two even farther in the background.

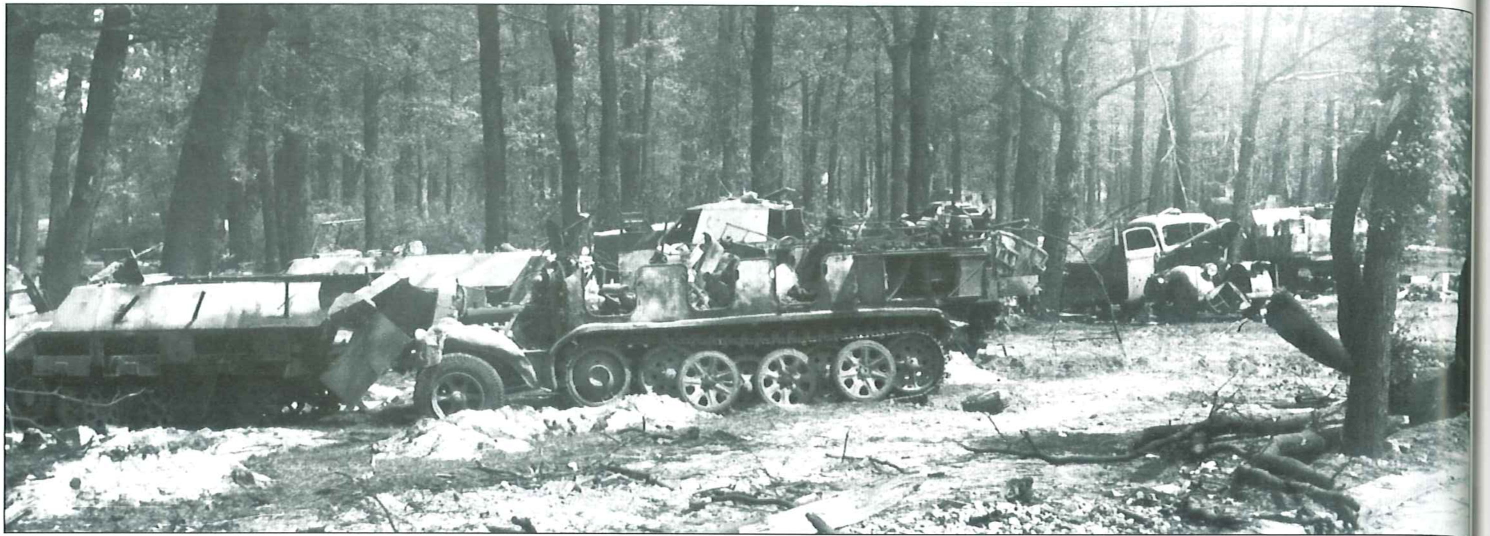




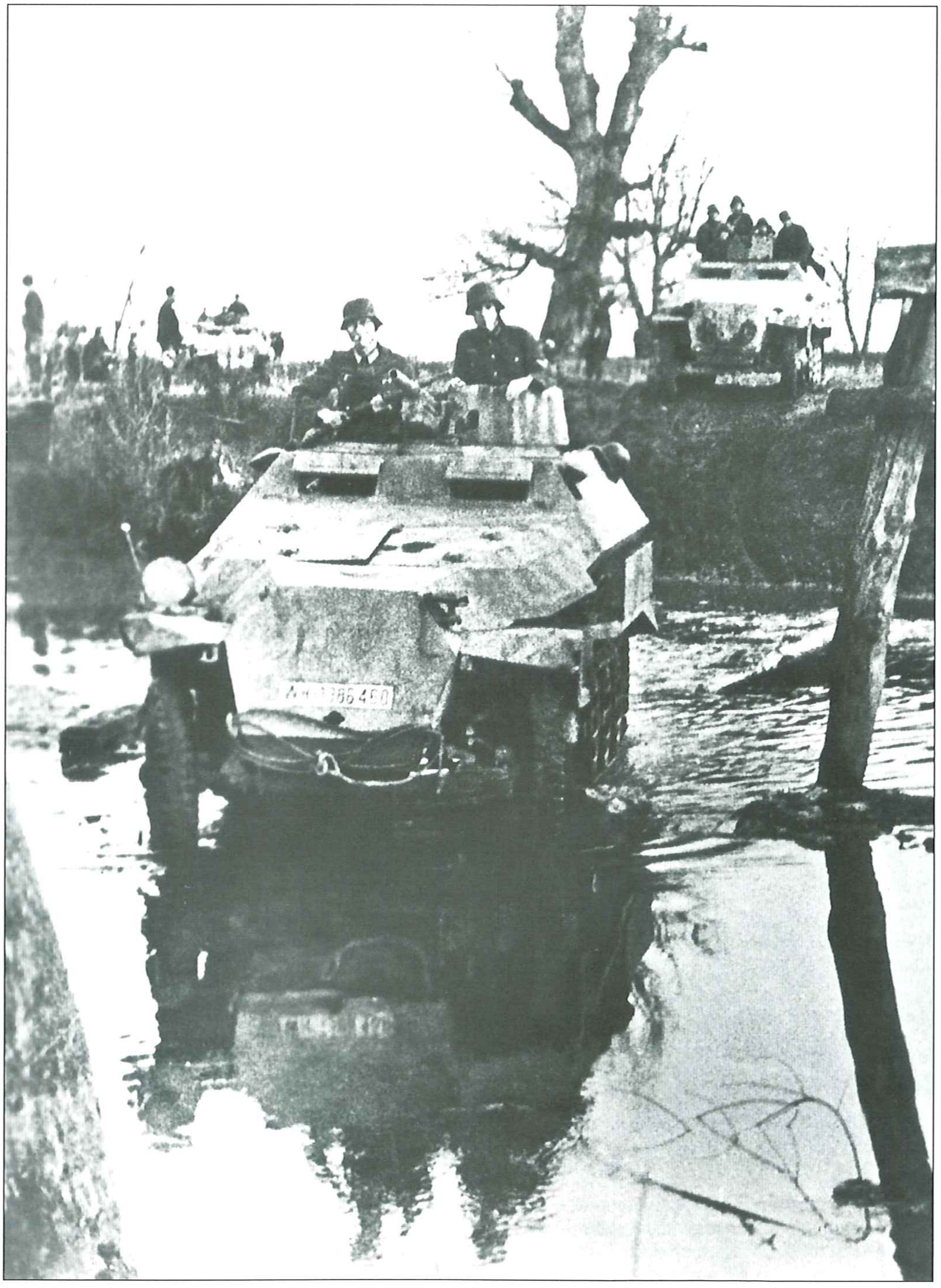
A shot of "Großdeutschland" in East Prussia in the autumn of 1944. There are six Sd.Kfz.251 Ausf.D in the background while the 7.5cm barrel of a Panther, camouflaged with foliage, can be seen in the foreground. The "GD" was one of the best divisions in the Wehrmacht at this time, not only due to the priority in replacement of equipment, but also due to the large numbers of volunteers who had been incorporated into this unit throughout the war.



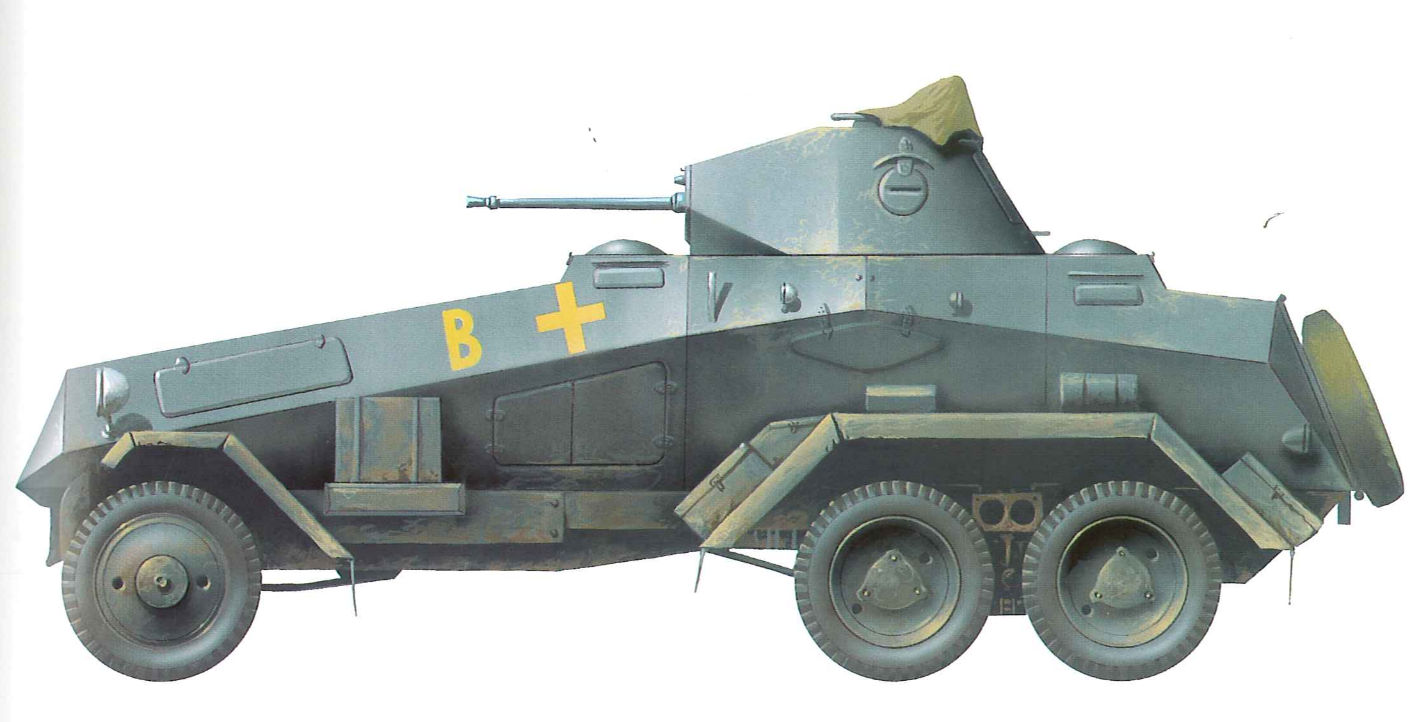
The crews of heavily camouflaged Sd.Kfz.251/1 Ausf.Ds from Panzer-Grenadier-Division "Großdeutschland" rest by a lakeside in East Prussia, autumn of 1944. The vehicles are painted with a criss-cross camouflage pattern, probably brown in color, which was used in the early spring and autumn seasons to blend with the natural landscape colors. The standard Wehrmacht armored infantry divisions, known as Panzergrenadier divisions, were equipped in 1944 with about 90 APCs but the elite units, "Großdeutschland" for example, employed many more, mainly in the first battalions of its Grenadier and Fusilier regiments.



The wrecks of combat vehicles abandoned in a park near Unten der Linden road in central Berlin, not far from the Brandenburg Gate, in April 1945. Many of the vehicles found by the Soviets in this area were totally destroyed in combat, but many were abandoned due to lack of fuel and used as stationary cover by German defenders. There are two Sd.Kfz.251 Ausf.D on the left, an Sd.Kfz.7/1 in the middle with an Sd.Kfz.7/2 behind and a Ford V3000 Maultier on the right. The APC on the left looks like it was knocked out during the battle, the rest were probably demolished after their capture.

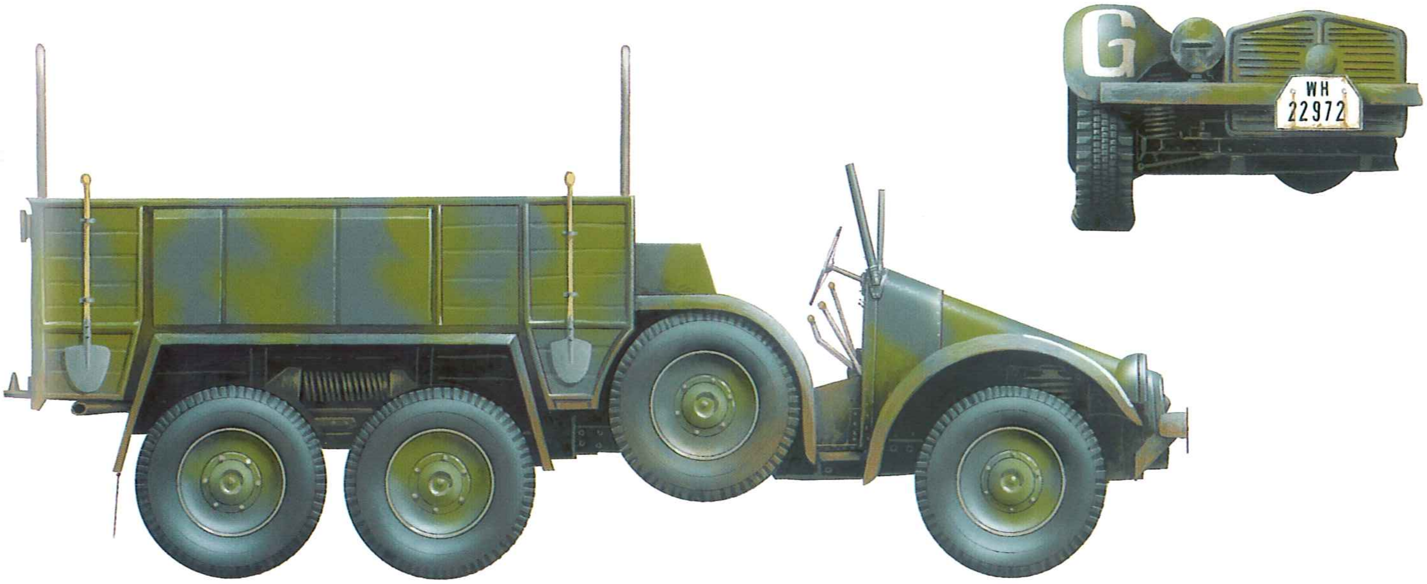


The Sd.Kfz.251/10 Ausf.C was armed with the obsolete 3.7cm Pak 36 anti-tank gun which was used as an infantry support weapon on these vehicles. The APC carried almost 170 rounds for its main armament, much more than the tanks originally armed with this gun or the crews of towed PaK 36 who often had to rely on supplies from ammunition trucks during prolonged engagements. The first 251/10s were put into service in 1940 for platoon commanders. The gun reduced the number of men the APC could carry but increased the firepower of the platoon. Early vehicles used the original gun shield which was modified on later vehicles to lower the silhouette. The vehicle and the gun shield have had a camouflage pattern painted over the overall sand color. The man on the left appears to be striking a pose for the cameraman.



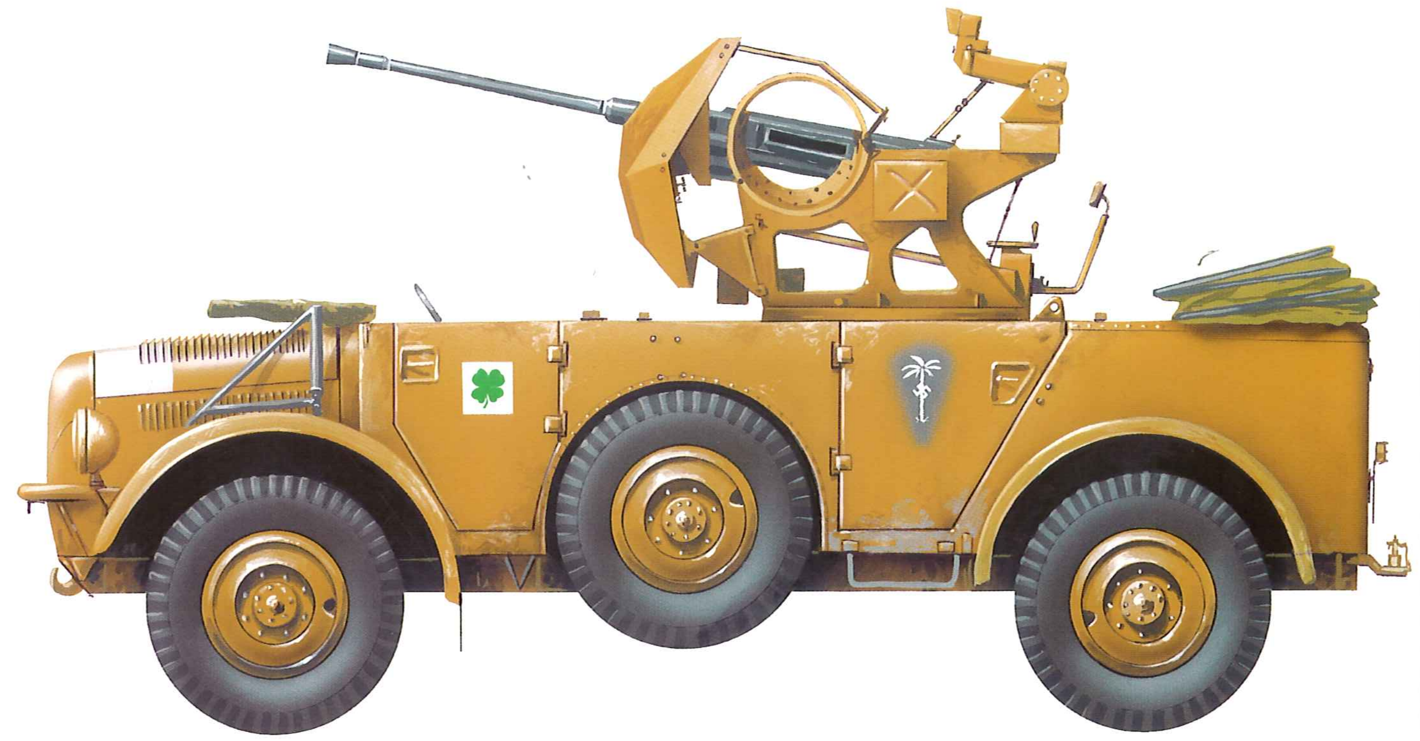
**Sd.Kfz.232 (6 rad), unknown unit, Poland, September 1939**

The armored car is painted overall gray which was standard for this period. It also carries standard markings for this campaign, a yellow national cross painted on the front and sides of the hull. The vehicle is further identified by a yellow "B" and had the license number WH-213341.



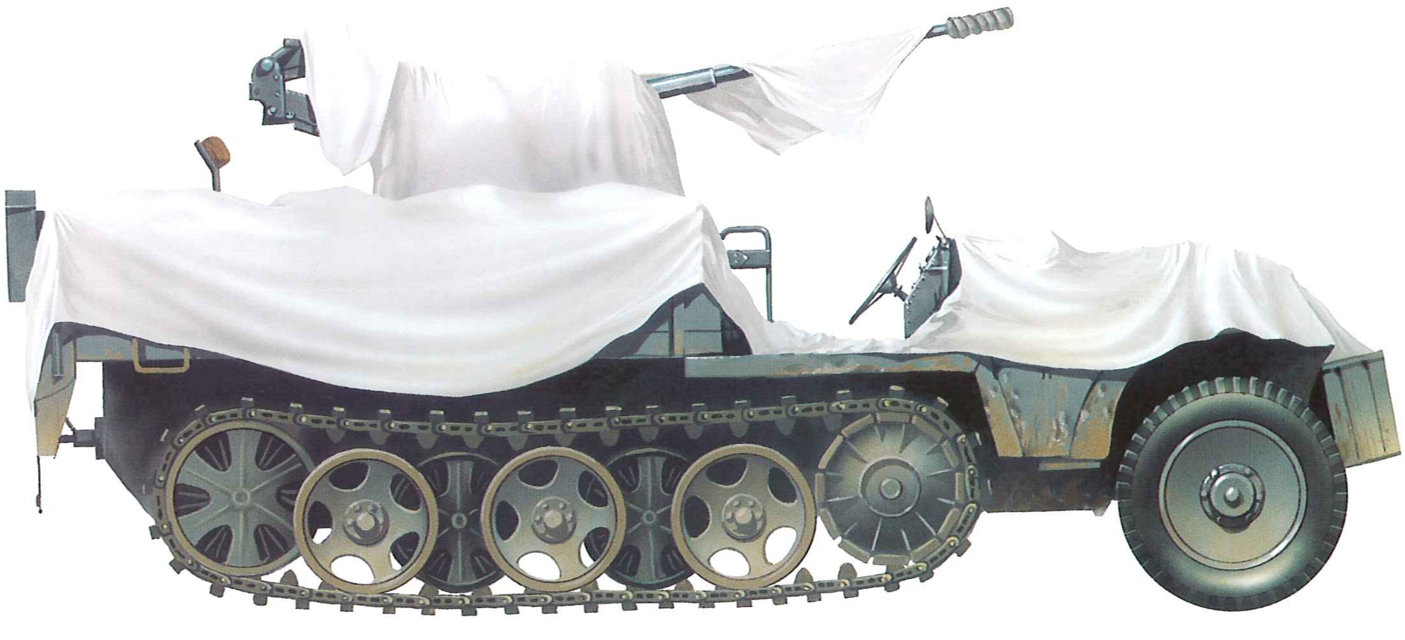
**Krupp Protz Kfz.69, unknown unit, Panzergruppe Guderian, Eastern Front, summer 1941**

The vehicle has an unusual camouflage pattern of green over the gray background which was rare at this time. The license plate - WH-22972 - and a large "G" for Panzergruppe Guderian, was painted in white on the front of the truck as well as on the back.



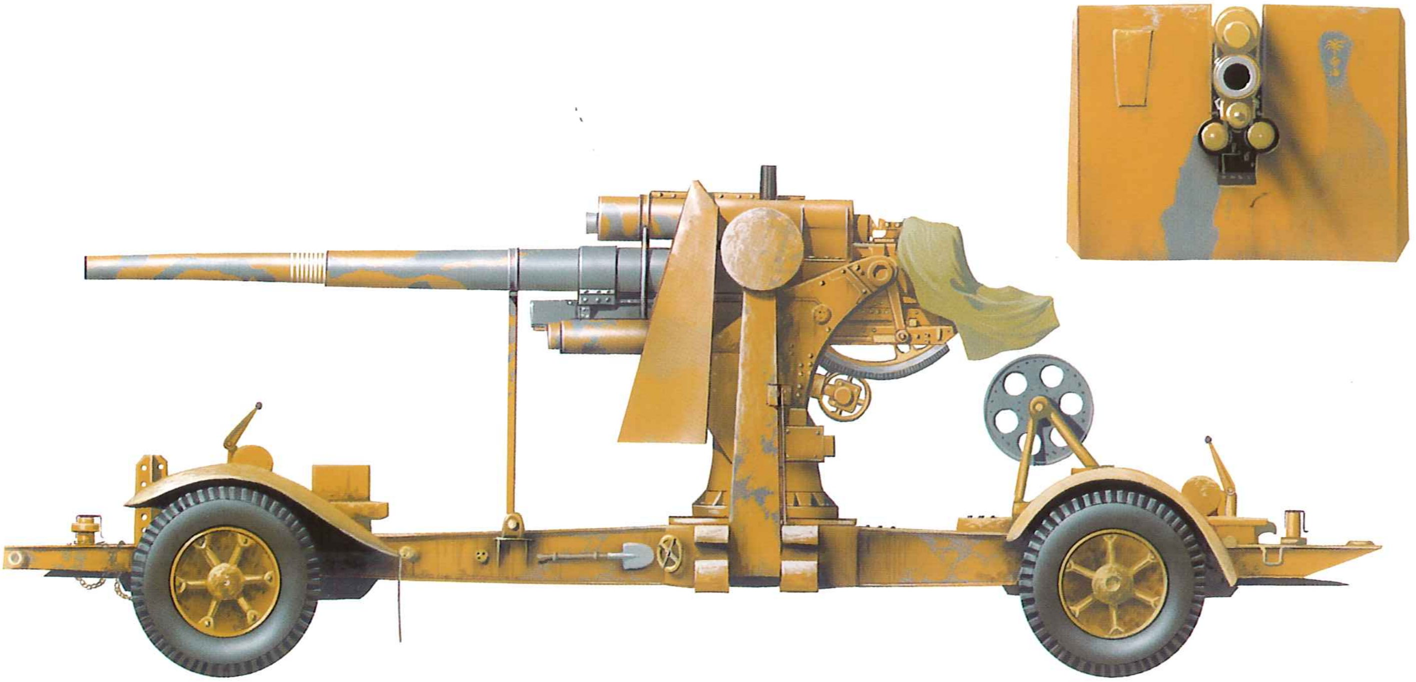
**Horch Kfz.81 with 2cm FlaK 38, unknown Luftwaffe FlaK Abt., Sidi Rezegh, 1941**

This vehicle has had an even coat of dark sand paint applied over the dark gray base. Markings consist of a unit emblem - a green fou leaf clover on a white square - painted on the front doors and the DAK palm emblem painted in white on both rear doors, the front righ mudguard and probably the back end, on a patch of the original gray paint. The license number WL-275688, is painted on a plate fixed to the front bumper with one probably on the rear of the car as well. There is a white air identification band painted on top of the engine cover.



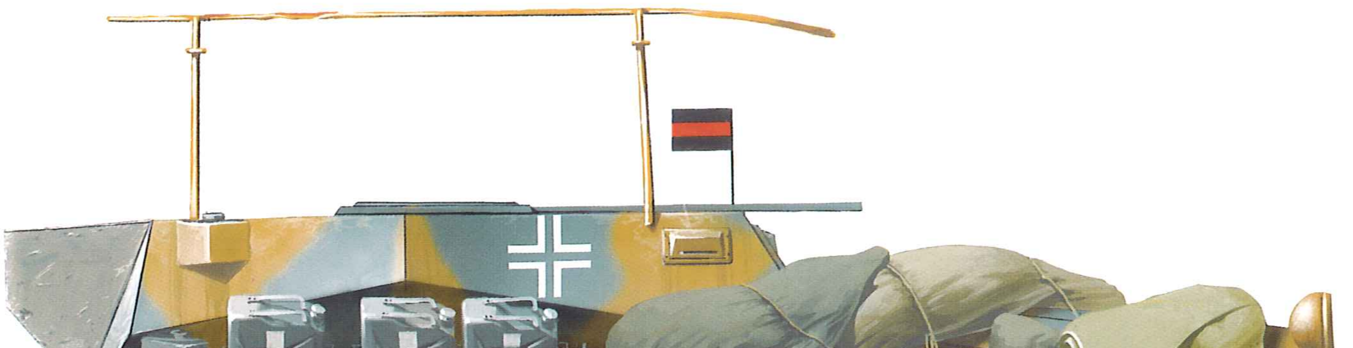
**Sd.Kfz.10/4, unknown unit, Moscow area, winter 1941**

The German Army was unprepared for their first winter in Russia and could not provide sufficient amounts of white paint for camouflagin vehicles. The vehicle crews were forced to resort to using whatever materials were at hand. This vehicle has been covered with bed sheet most likely obtained from Soviet peasants.



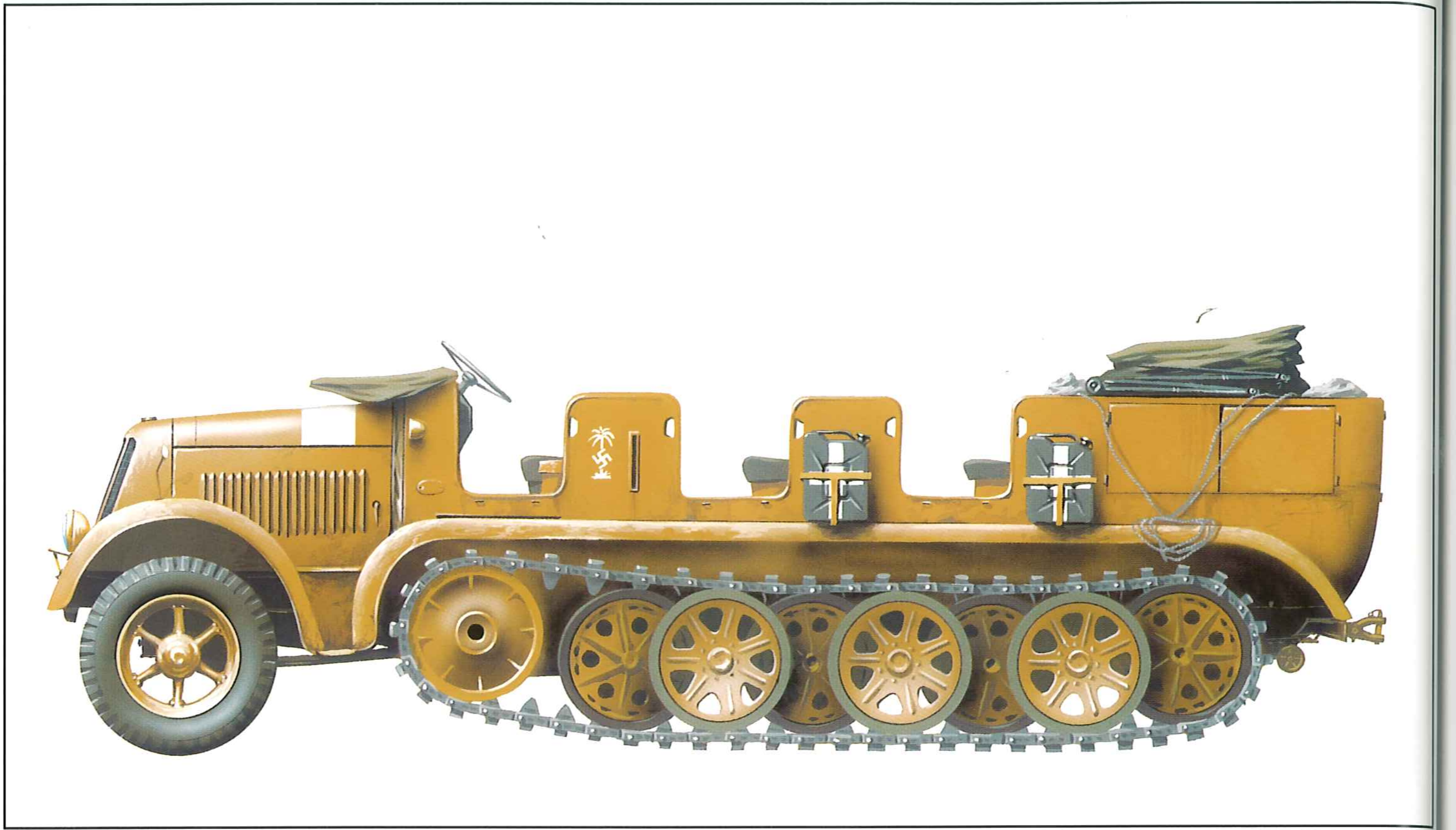
**8.8cm FlaK 18, DAK, North Africa, 1941/42**

It was as an anti-tank weapon that the "88" gained its fearsome reputation in North Africa. They were camouflaged in the same way as all the other pieces of equipment of the DAK, a sand yellow coat applied over the dark gray base. The DAK palm tree emblem was painted on the gunshield on a dark gray patch.



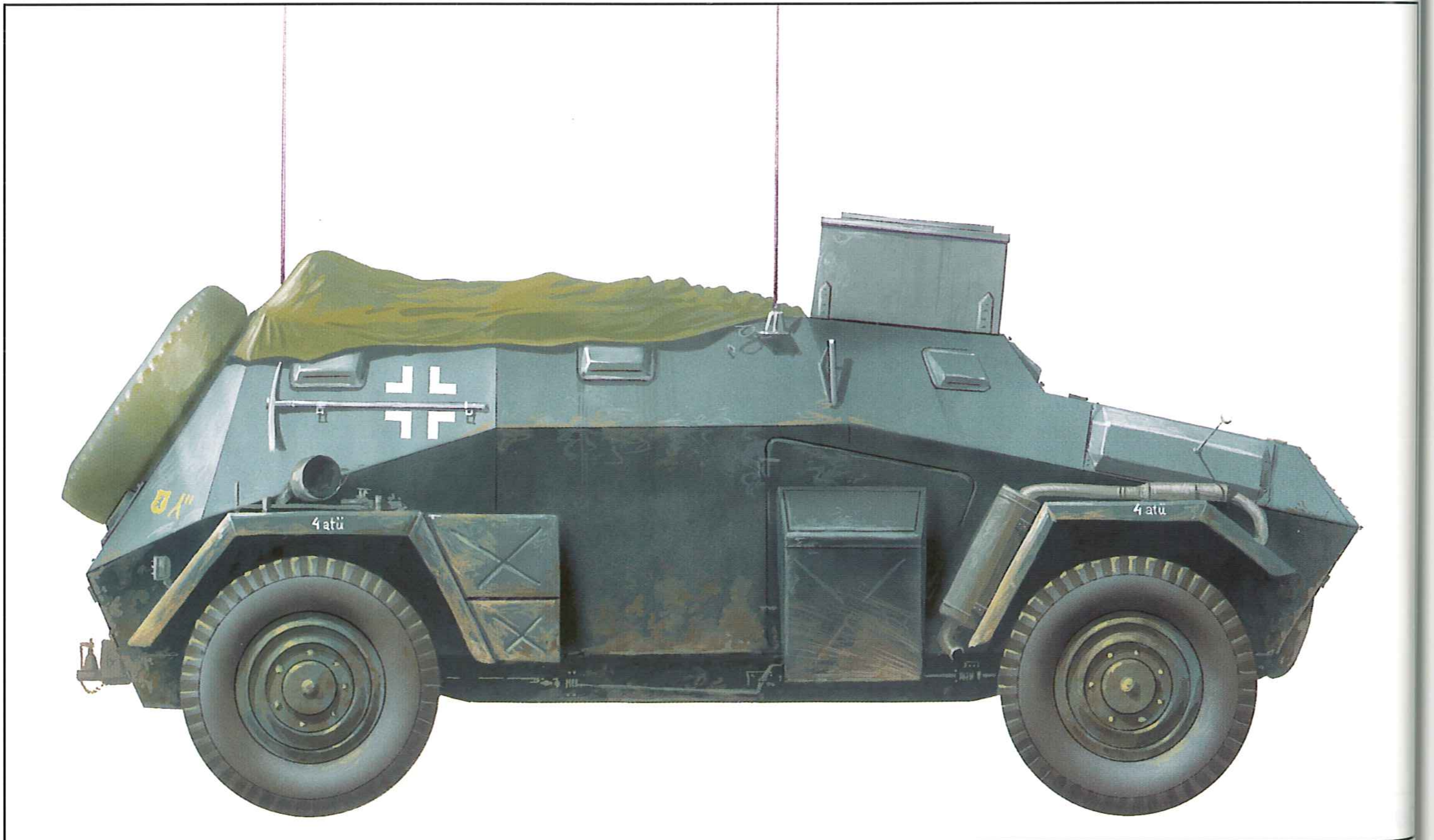
**Sd.Kfz.253, Art.Rgt.155, 21.Panzer-Division, North Africa, June 1942**

The vehicle carried a two color camouflage scheme, composed of the standard dark gray background with an irregular pattern of dark sand to blend in with the North African landscape. There was a full set of markings on this vehicle including the divisional emblem and the tactical sign for the 3rd company of a towed artillery battalion painted in white on the front and rear. The command flag is for the commander and staff of an artillery regiment.



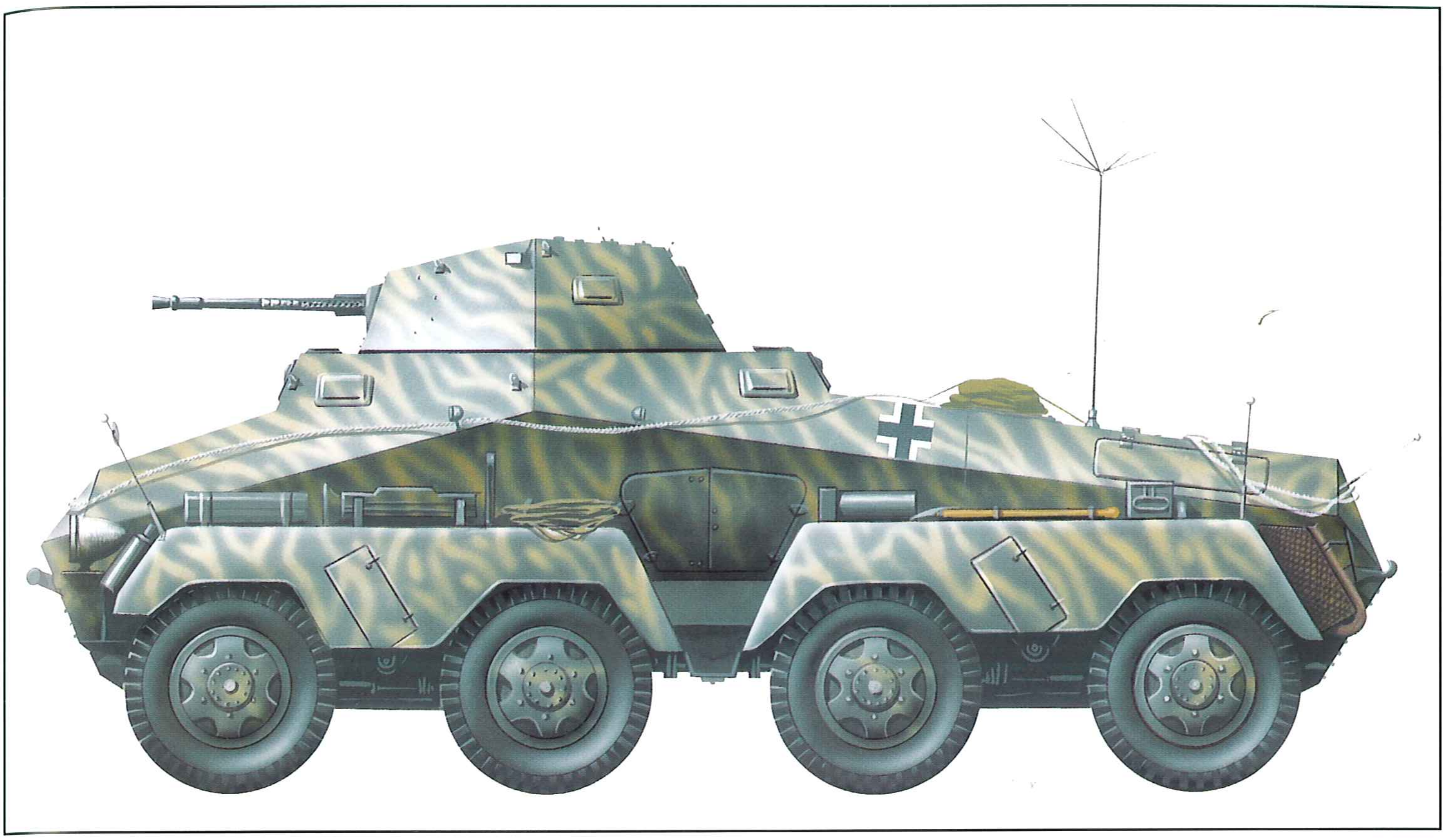
**Sd.Kfz.7, DAK, El Alamein, July 1942**

This type of half-track was the prime mover for 15cm sFH 18 heavy artillery and 8.8cm FlaK batteries in the Panzer divisions of the Deutsches Afrika Korps (DAK). Originally, all the German vehicles sent to North Africa had the European dark gray paint and were repainted in the field. This half-track has had a coat of dark sand paint applied over the dark gray and a white air recognition bar painted on the engine cover.



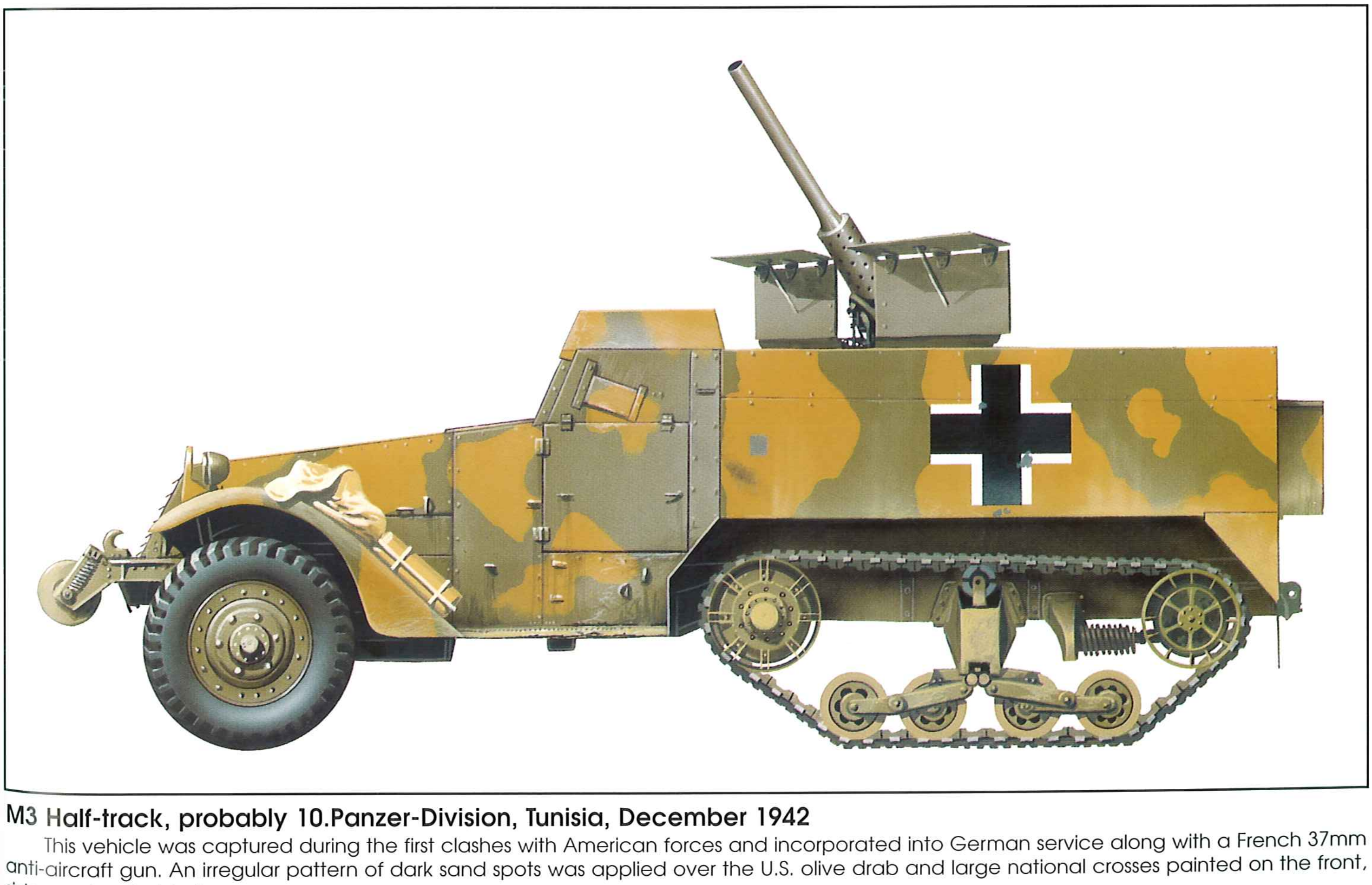
**Sd.Kfz.247, Aufkl.Abt.1, 3.Panzer-Division, near Stalingrad, summer 1942**

This is the personal armored car of the commander of the reconnaissance battalion of 3.Panzer-Division and carries the divisional emblem and tactical sign on the rear of the vehicle in yellow plus a white outline national cross on the dark gray paint.



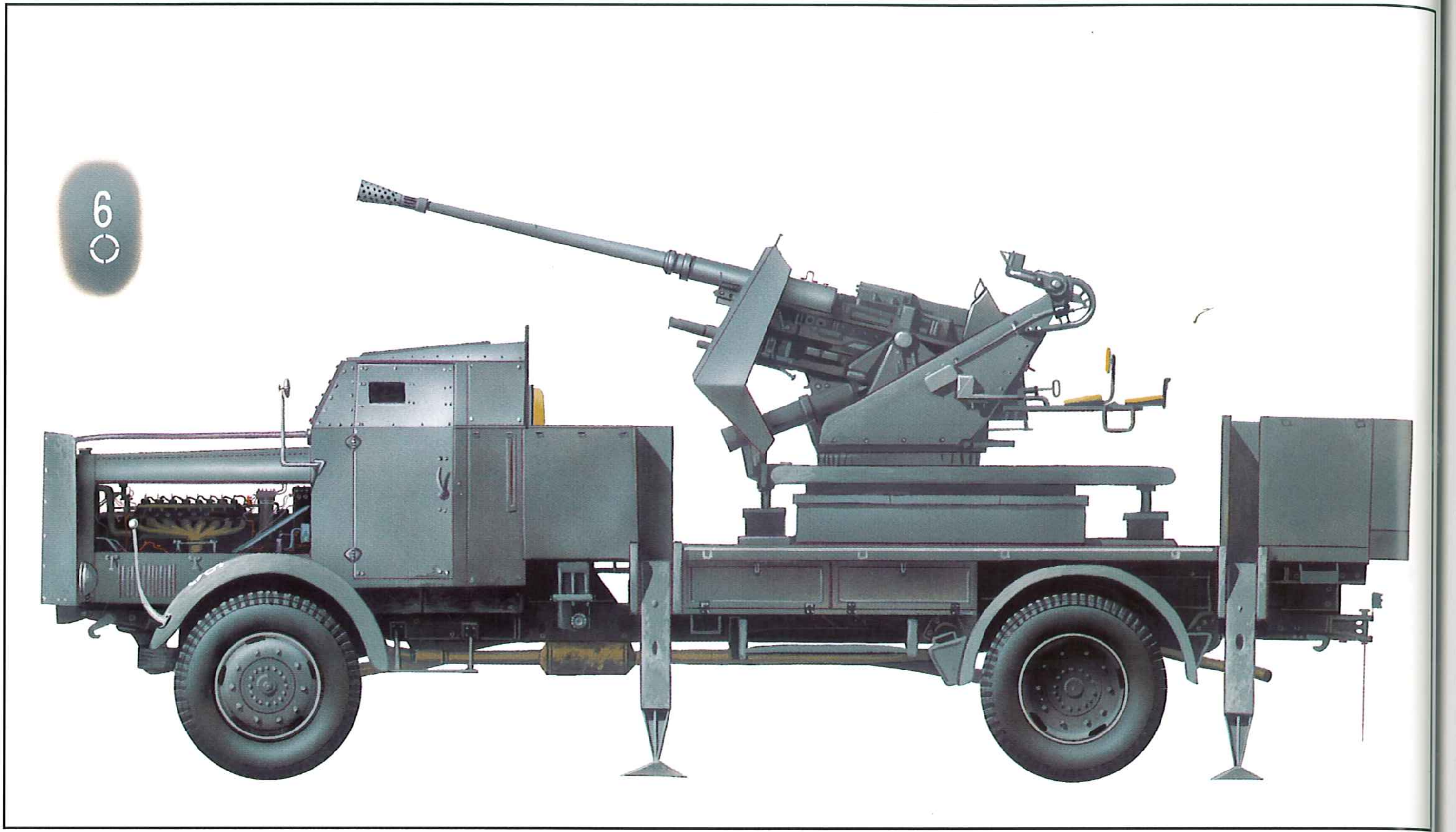
**Sd.Kfz.231, Pz.Aufkl.Abt.33, 15.Panzer-Division, Tunisia, December 1942**

This vehicle carried very limited markings and the whole dark gray body of the armored car was painted with a regular pattern of dark sand wavy lines. The license plate of this vehicle was painted on the upper half of the front plate and a tactical sign for the 1st armored car company was located just above it, painted in white.



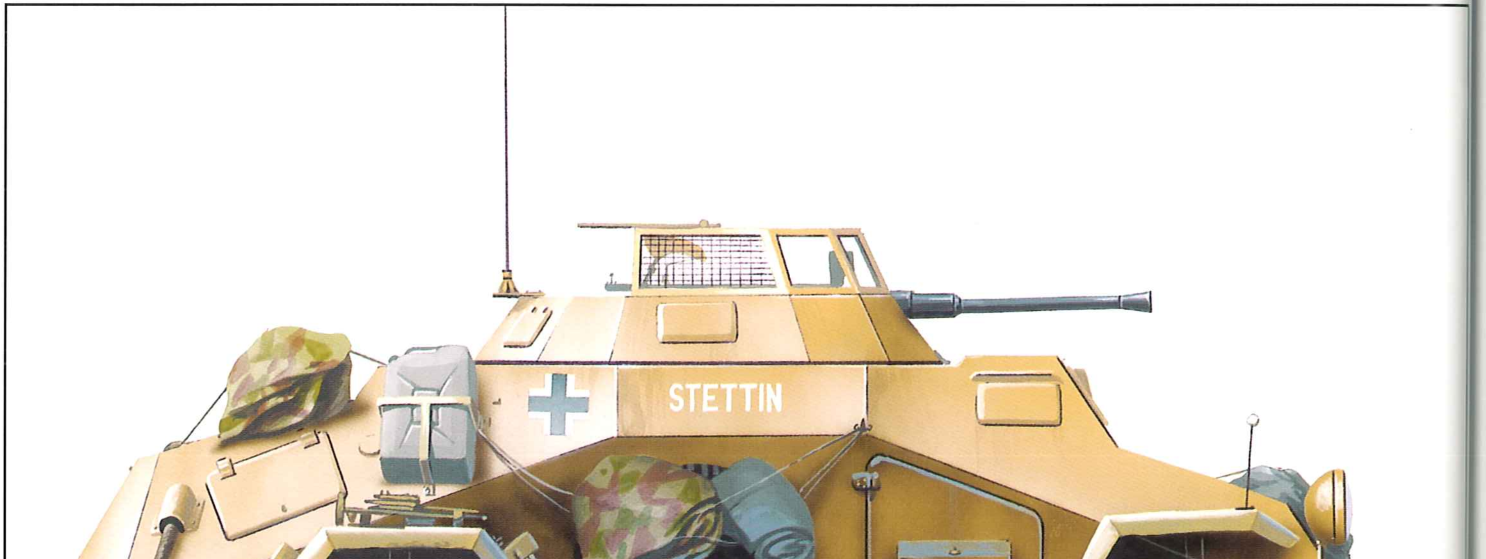
**M3 Half-track, probably 10.Panzer-Division, Tunisia, December 1942**

This vehicle was captured during the first clashes with American forces and incorporated into German service along with a French 37mm anti-aircraft gun. An irregular pattern of dark sand spots was applied over the U.S. olive drab and large national crosses painted on the front, sides and probably the rear.



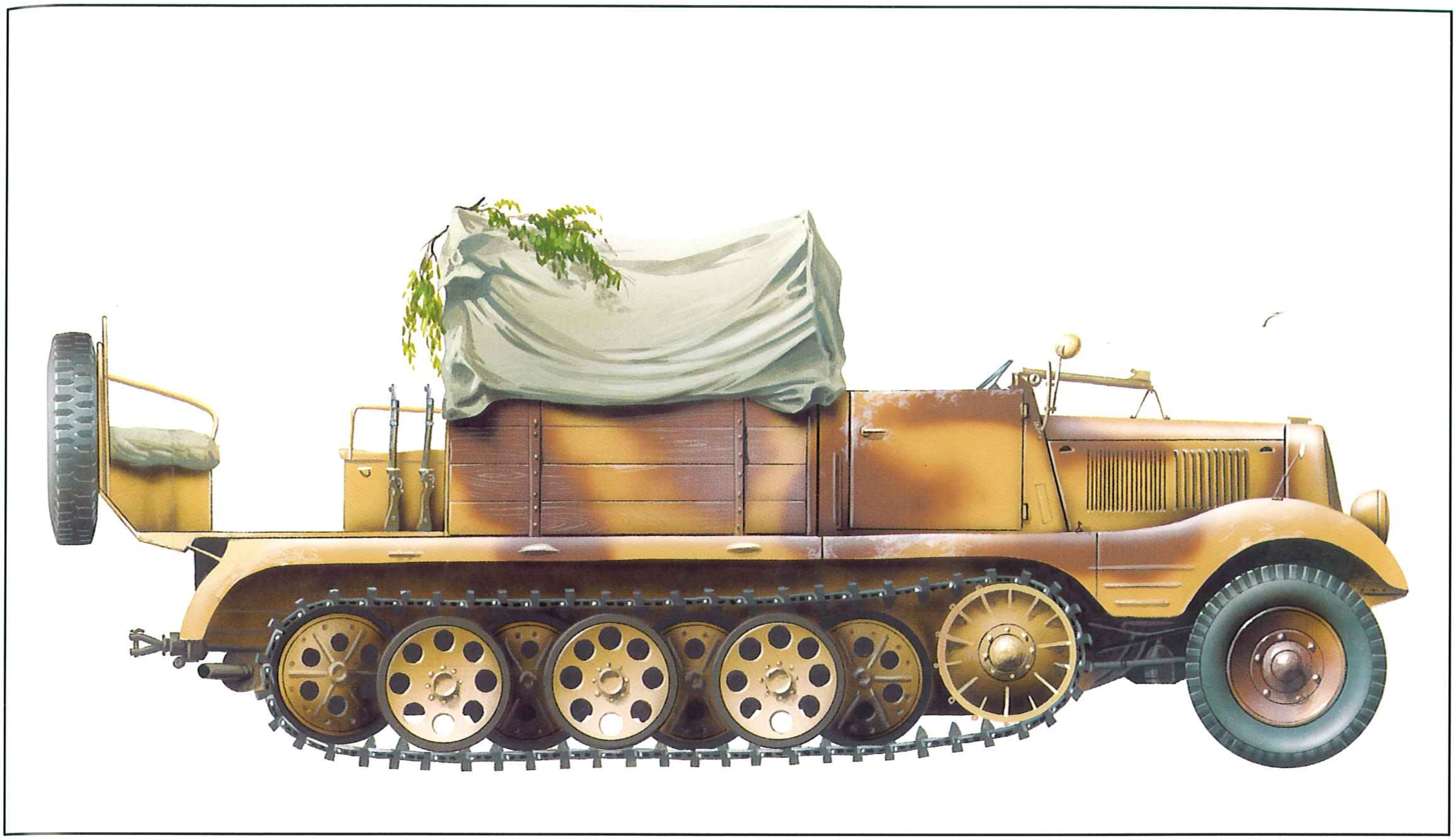
**Mercedes-Benz L4500A with 3.7cm FlaK 36, Italy, 1942/43**

It is possible this vehicle was employed by Division Hermann Göring (Panzer-Division Hermann Göring after May 21, 1943) which was involved in the battles in Sicily and Southern Italy before being transferred to the Eastern Front in July 1944. The truck was painted in overall dark gray with white tactical signs painted on the mudguard.



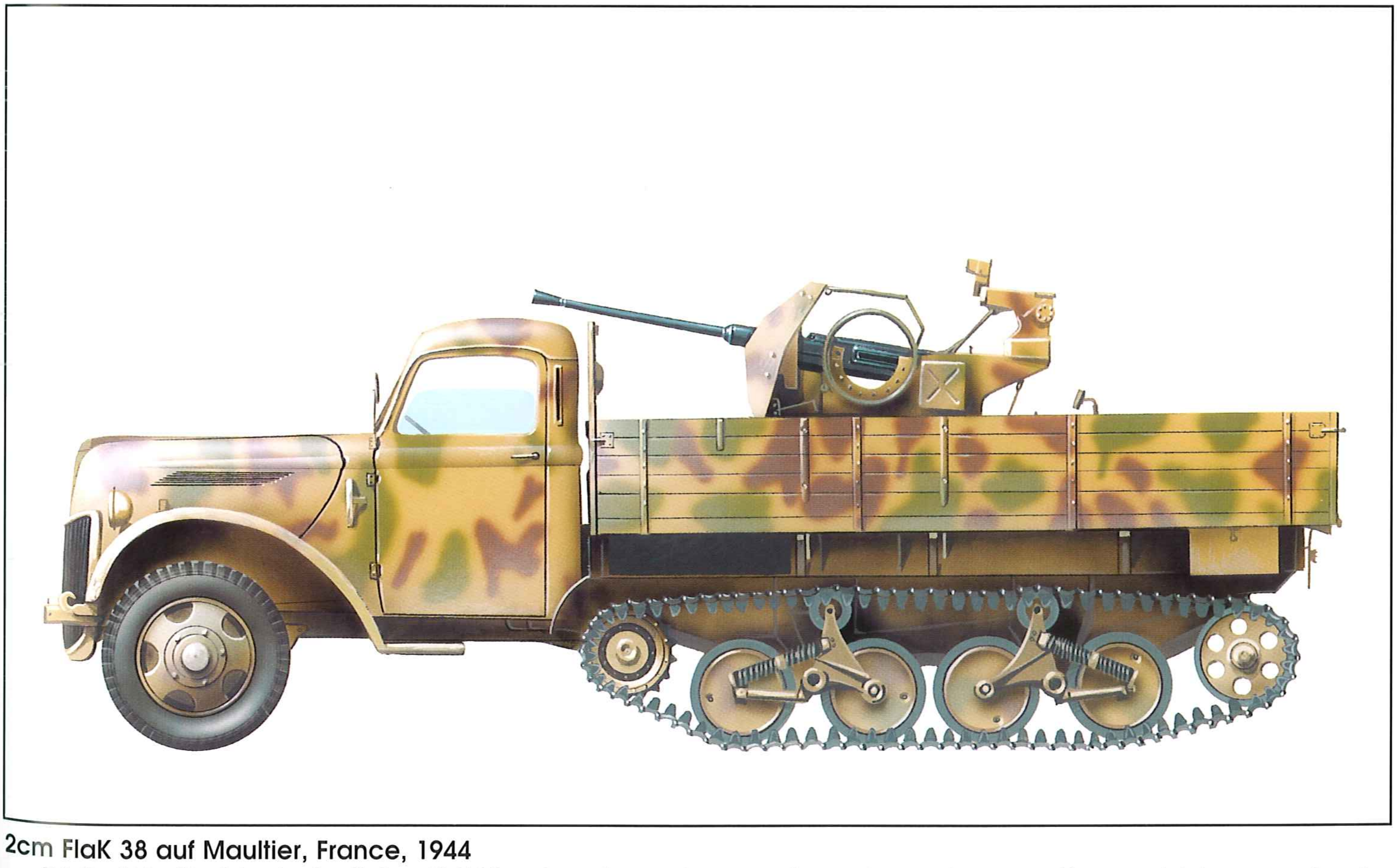
**Sd.Kfz.222, unknown unit, Italy, 1944**

The vehicle is painted in overall sand with no camouflage pattern applied. This late model armored car has the standard national cros marking and a vehicle name, "Stettin", named after the city in Poland which was the former capital of Pomerania, painted in white.



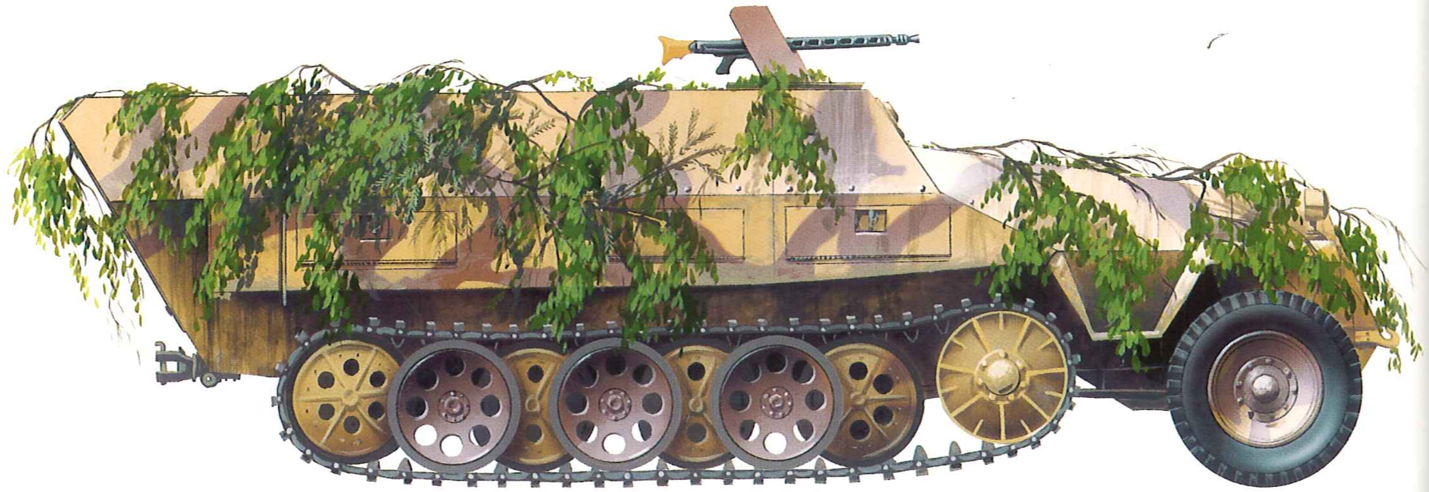
**Sd.Kfz.11, unknown Pz.Jg.Abt., H.Gr.Süd, summer 1944**

At this time, there were dozens of anti-tank battalions in the southern sector of the Eastern Front, most of which were fully motorized. These small units were organized within the divisions and utilized as independent battalions at the higher command levels. The half-track is painted with a non-standard camouflage scheme - usually green was used over the dark yellow in the summer.



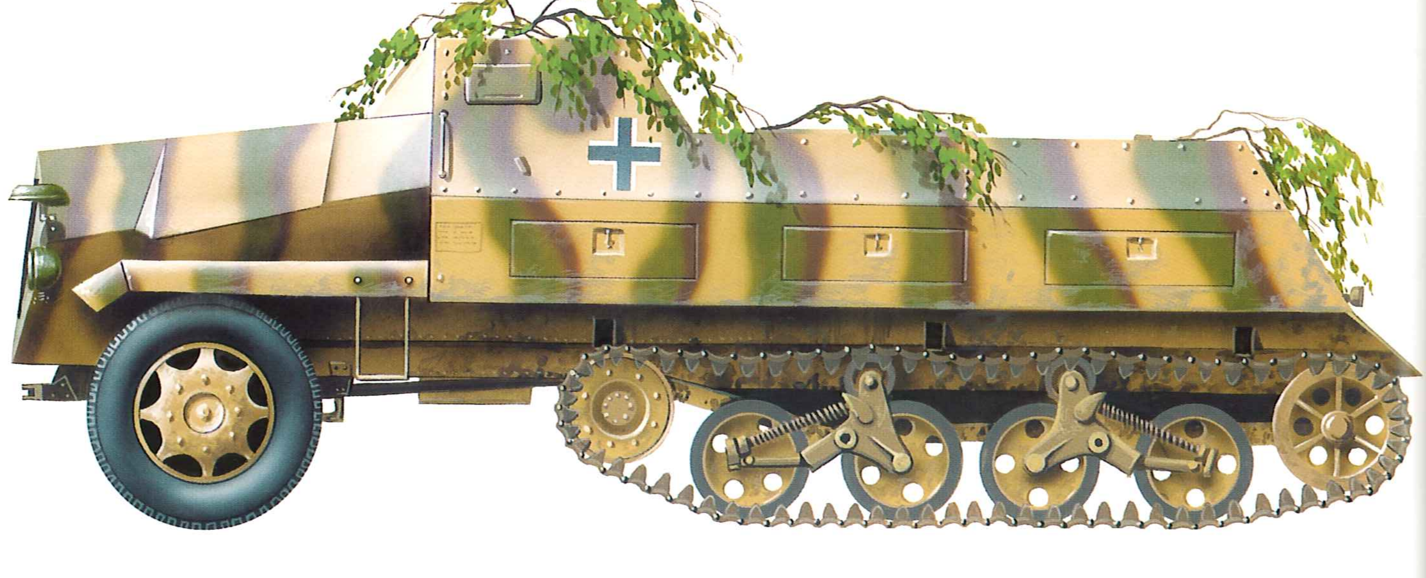
**2cm FlaK 38 auf Maultier, France, 1944**

This Ford Maultier 2-ton truck with 2cm FlaK 38 carries a three color camouflage scheme of green and brown splotches sprayed on the overall sand base.



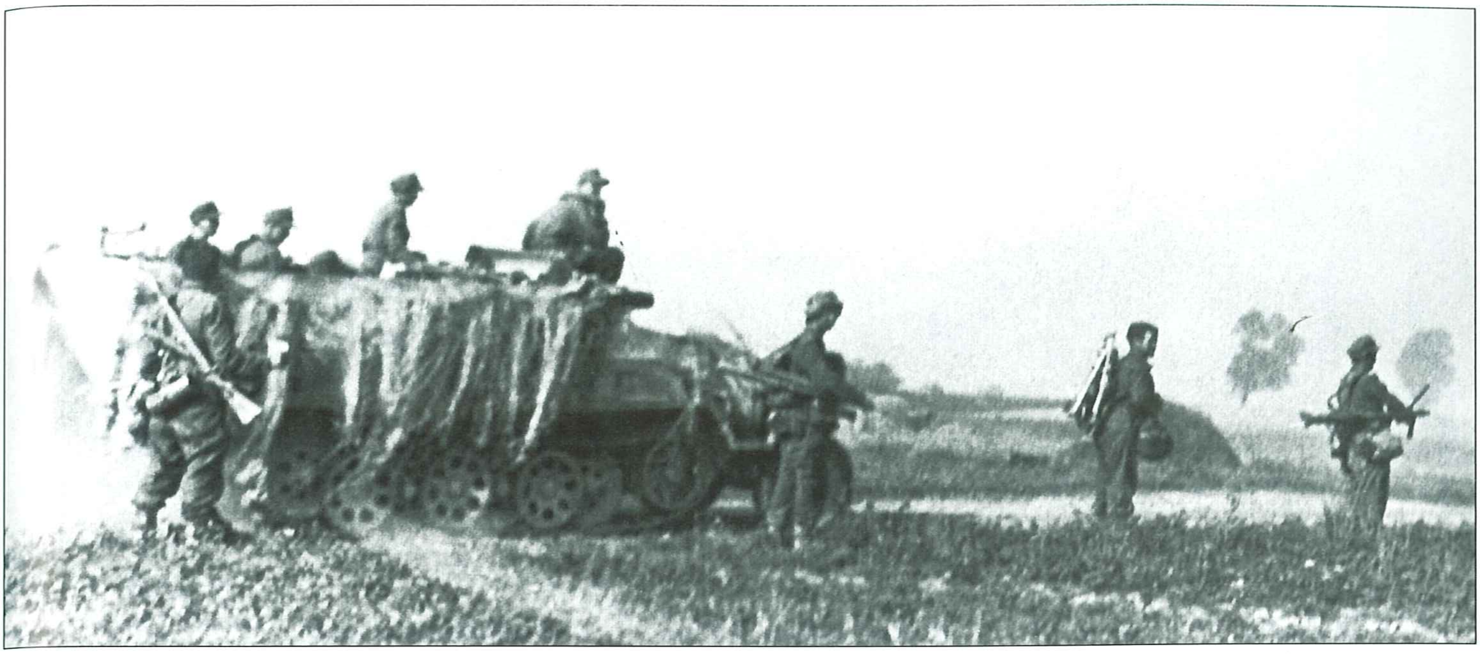
**Sd.Kfz.251/1 Ausf.D, Pz.Gren.Div. "Großdeutschland", East Prussia, autumn 1944**

The Armored Personnel Carrier is painted with a dark brown camouflage pattern over the sand background. The pattern was applied to the wheels as well, perhaps an indication the crew had some spare time available. Foliage has also been added to break up the sharp lines of the vehicle.

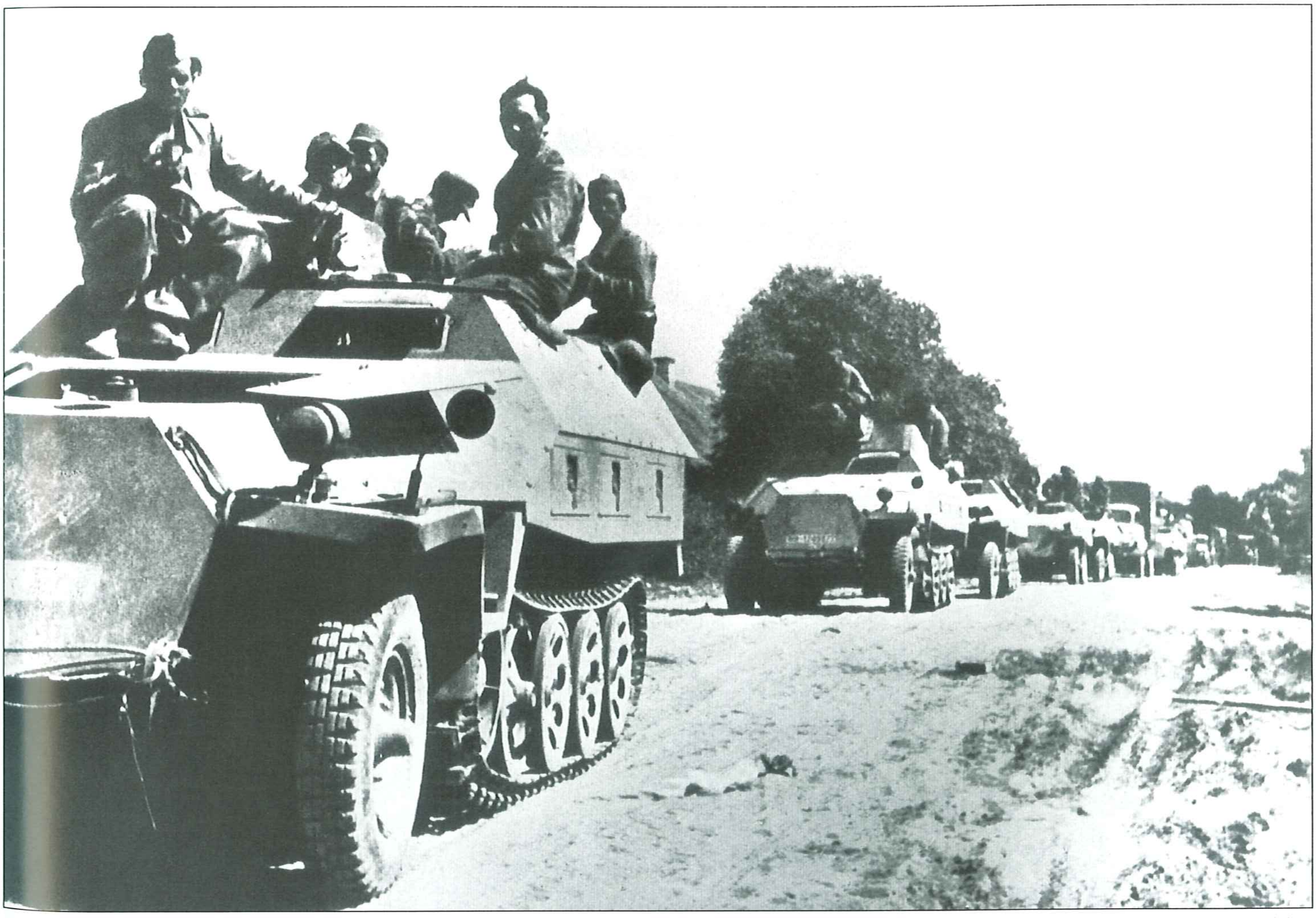


**Sd.Kfz.4 Munitionskraftwagen fur Nebelwerfer, Central Germany, April 1945**

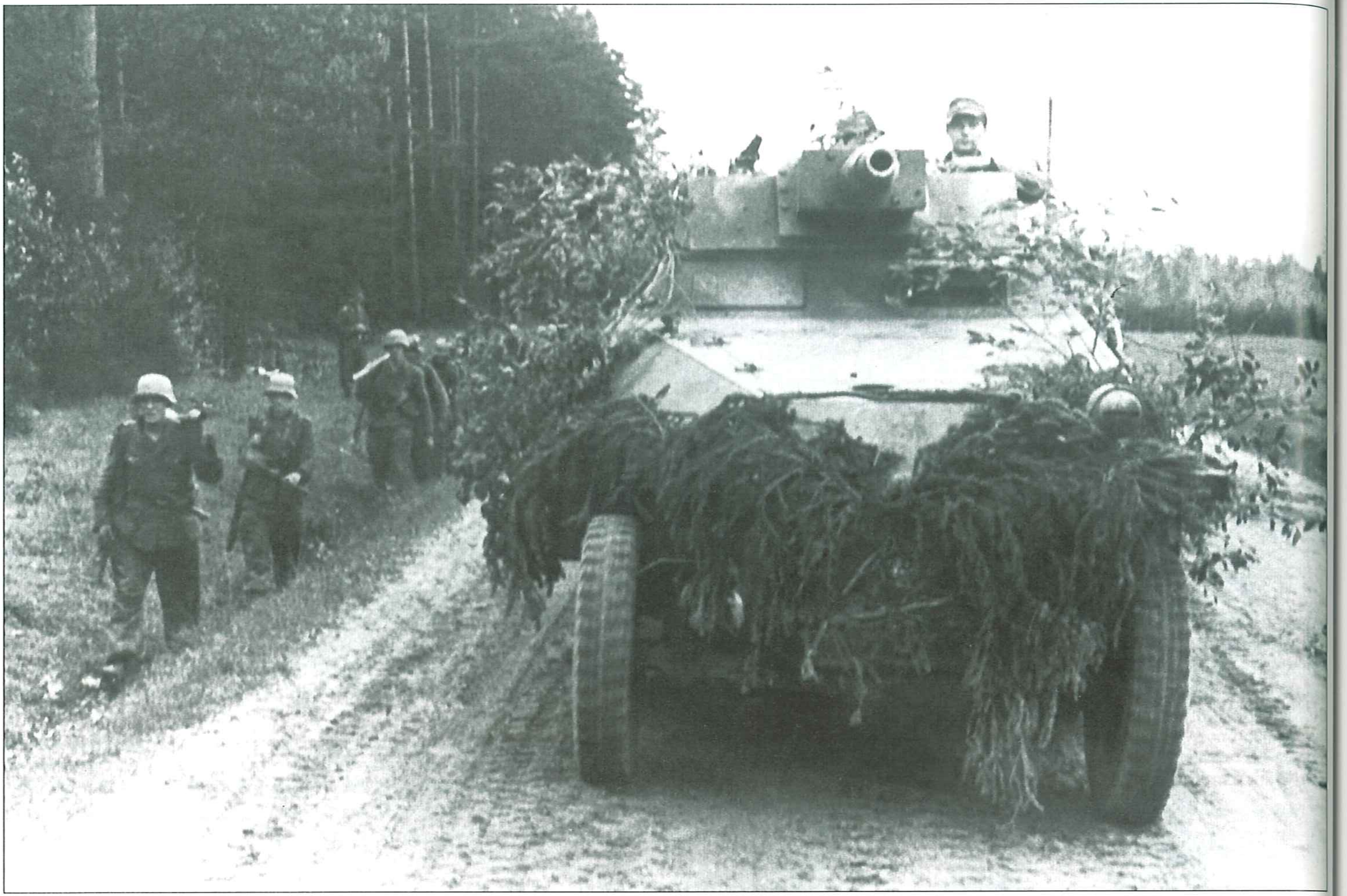
These vehicles were originally employed in Nebelwerfer units, but throughout the last months of the war, many of them were issued to othe artillery units. This vehicle carries a typical late war camouflage scheme, composed of green and brown lines applied over the standard overa sand base.



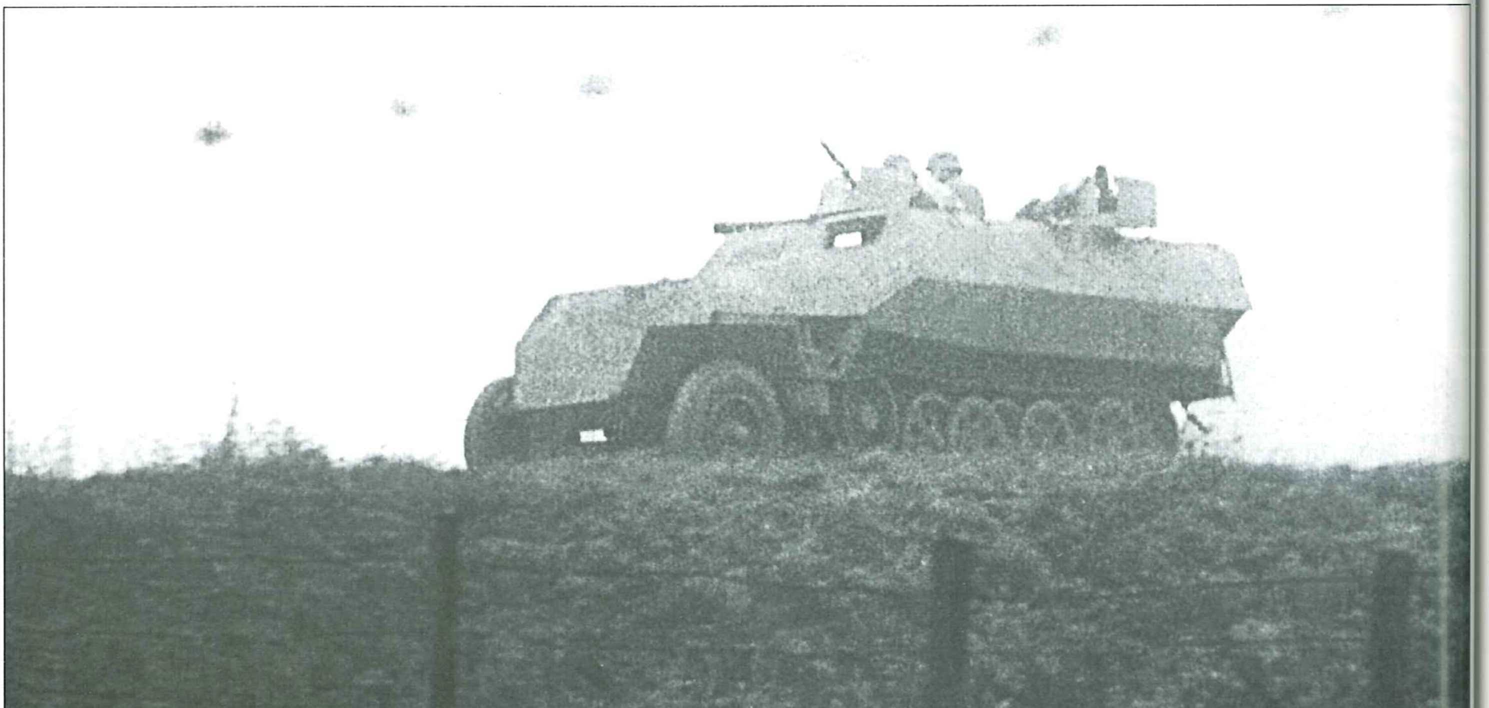
The artillery support model of the Sd.Kfz.251 is known as the "251/9". It was armed with the old, short barrel 7.5cm KwK 37 L/24 which had been previously installed in Panzer IV Ausf.A to Ausf.F1 in the spring of 1942. Here we have an example of such a vehicle, camouflaged with straw and photographed in early autumn 1944 during the battles against the Russian bridgehead on the Vistula River in Poland. In 1944, there were 23 Sd.Kfz.251s in each Panzergrenadier company with three for the headquarters section, 3 platoons with 4 vehicles each and a heavy weapons platoon with 8 vehicles. In the heavy weapons platoon there were 3 Sd.Kfz.251/17 for anti-aircraft protection, 2 Sd.Kfz.251/9 and 2 Sd.Kfz.251/2 armed with the 8cm mortar plus an Sd.Kfz.251/1 for the platoon leader.



A long column of a Panzergrenadier regiment marching down a road to the front lines in Eastern Europe, early autumn of 1944. The leading vehicles are the Sd.Kfz.251, including the "251/9" model, unofficially called "Stummel". The first "Stummel" were built in 1942, but in 1944 the construction was simplified by mounting the gun directly on top of the vehicle. They were initially introduced to replace the ineffective 3.7cm PaK 36 in the Sd.Kfz.251/10 and as the 7.5cm KwK 37 guns became available from Panzer IV production. Theoretically, there were 2 "Stummel" in each company and 6 in a heavy weapons company in each battalion of a 1944 Panzergrenadier regiment.

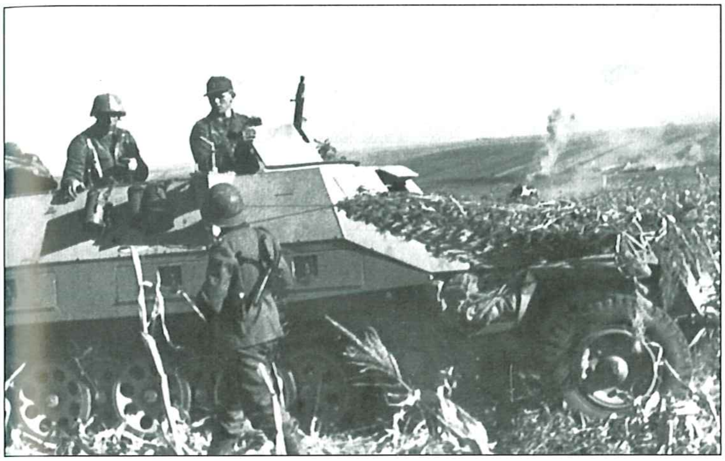


A front view of another late production "Stummel" which was produced only on the simplified Ausf.D chassis. The first version had the gun installed in the front of the superstructure to the right of the driver. This required additional work to produce, and so in 1944, when German military industry had reached its peak, it was changed to make construction simpler. This "251/9" belonged to the Panzer-Grenadier-Division "Großdeutschland" during the battles around Memel in the fall of 1944. Note the coaxial MG42 on the left.

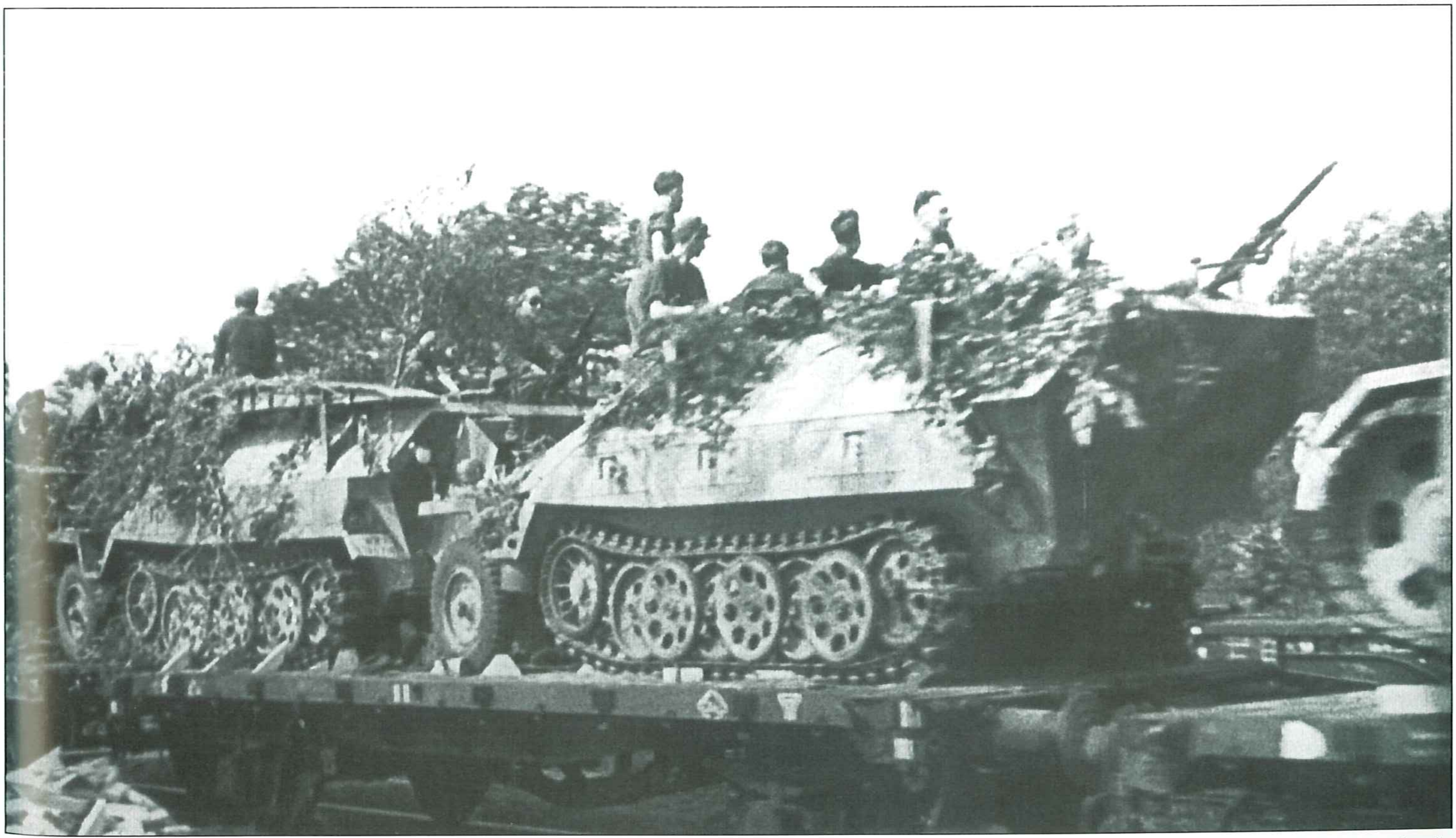


The Sd.Kfz.251/16 flame thrower model was introduced in January 1943 into the Pionier battalions of the Panzer divisions and later on in a few of the best equipped Panzergrenadier divisions. It carried two 700 liter flame fuel tanks in the rear of the compartment which allowed for approximately 80 short bursts to a range of up to 35 meters. This one is photographed somewhere in Western Europe in the late summer of 1944. The APC has no markings which was not unusual, for vehicles were often sent into combat as soon as they were received.

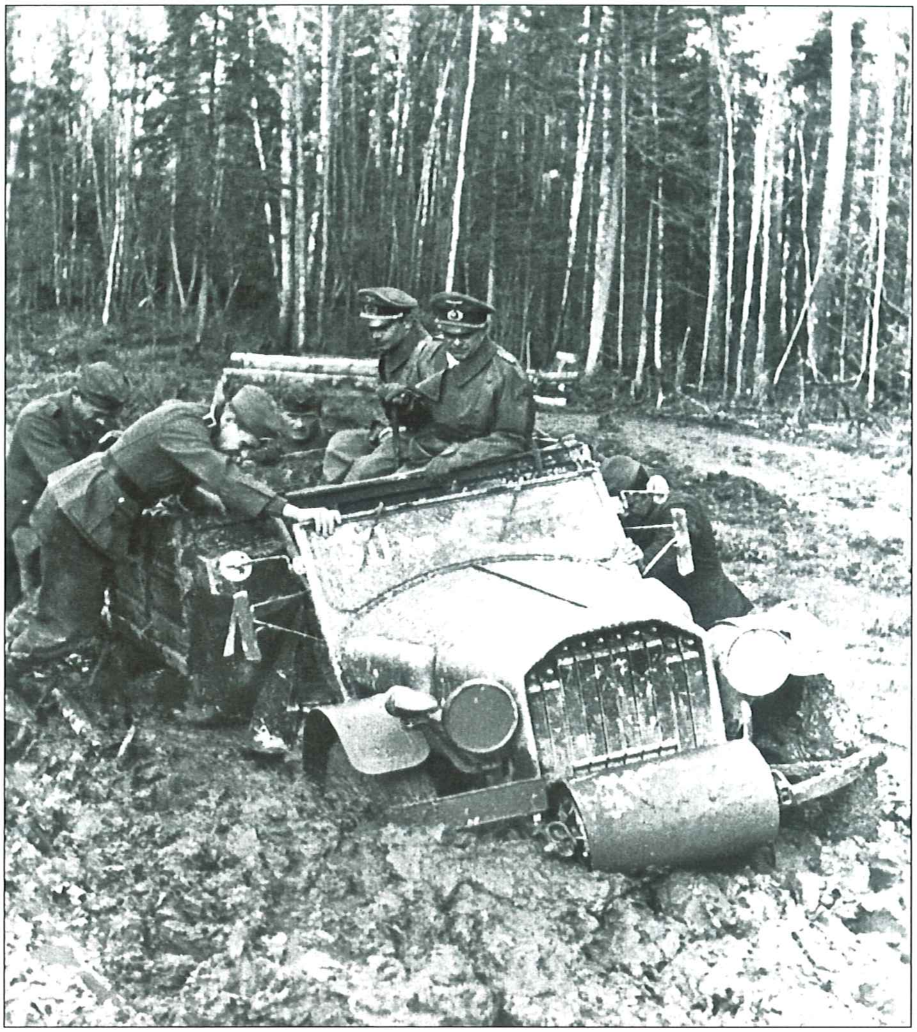
The Pionier version of the Sd.Kfz.251 was probably one of the rarer APCs. Here we see one of them from an unknown division during the battles around Zhitomir in the autumn of 1943. There is a unit emblem visible on the upper right corner of the front plate very similar to that of s.Pz.Abt.507. The Sd.Kfz.251/7 were assigned to the 3rd company in each Pionier battalion. The light assault bridges carried on the sides of the vehicle were very useful for crossing ditches or narrow streams during attacks.



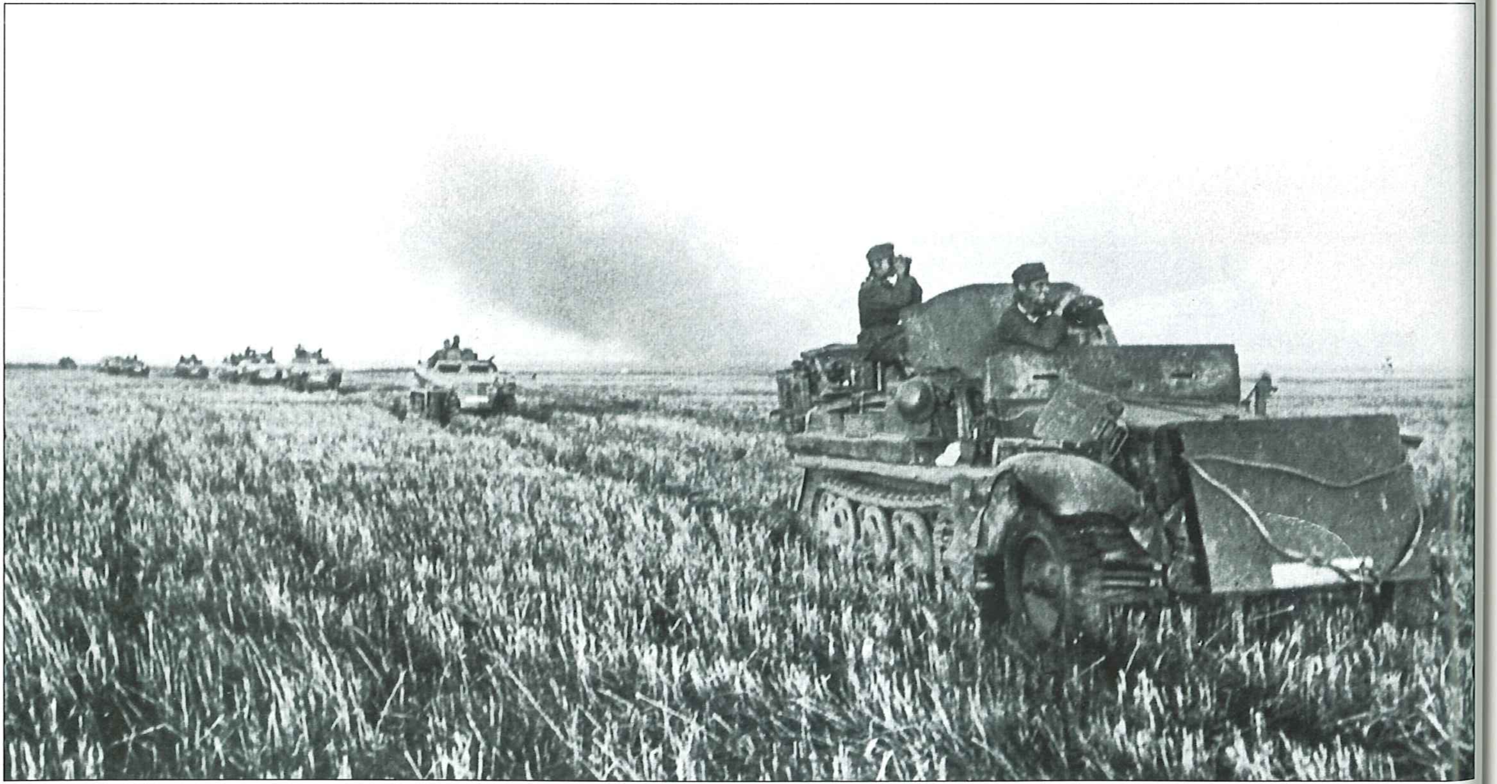
The Sd.Kfz.251/7 Ausf.D of a Wehrmacht unit with a camouflage net on the engine deck, involved in a battle somewhere in the Soviet Union in the autumn of 1943. The production of the "Dora" version started in September 1943 and was initiated due to the urgent need to increase supply of this vehicle which could only be done by reducing the number of plates required in the main body. The construction of the whole superstructure was simplified with only minor changes in the chassis introduced later on. The front support for the bridging section is visible although the bridging sections themselves are missing.



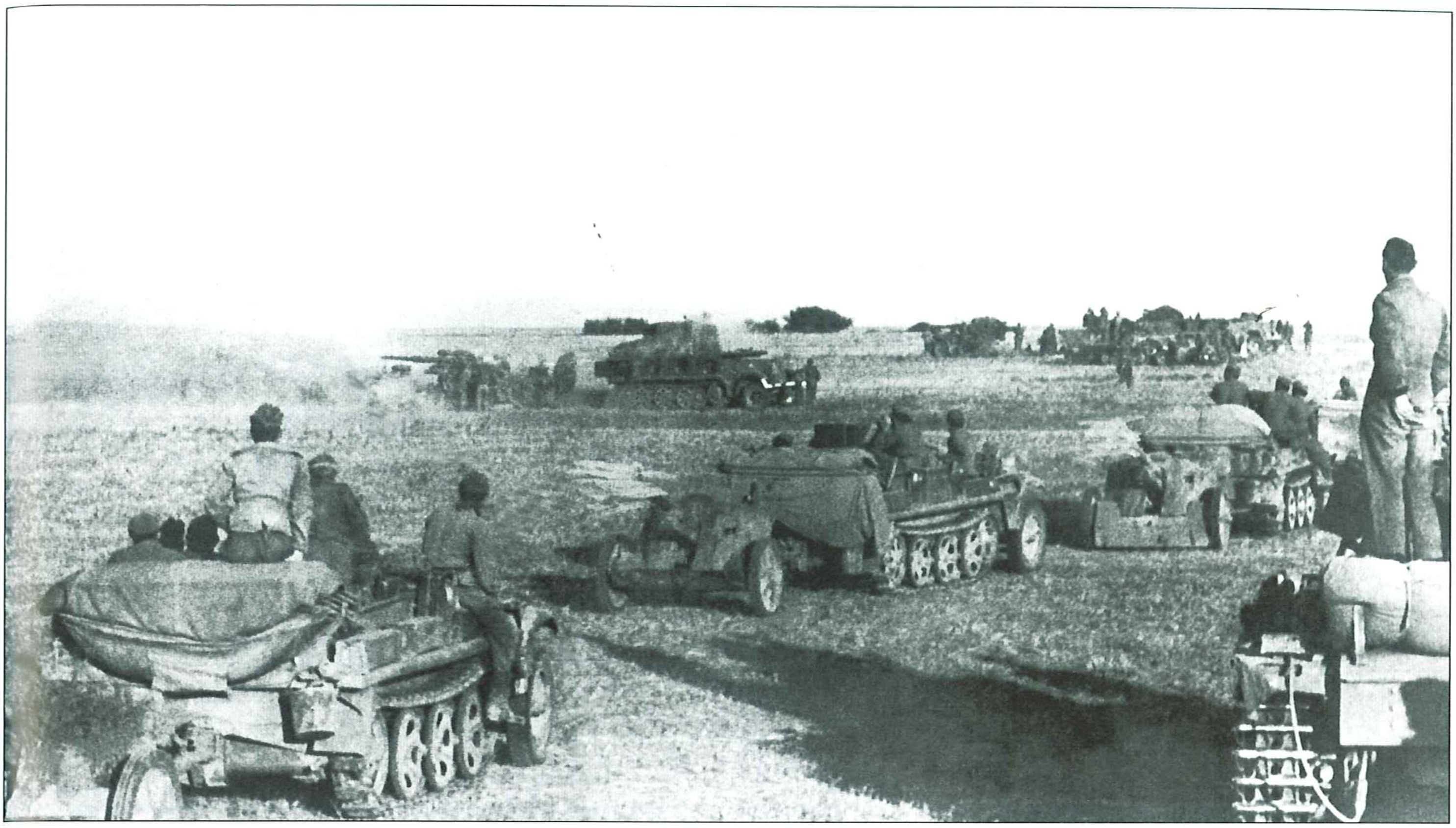
Another two Sd.Kfz.251/7s from a Wehrmacht division during rail transport across Europe in the summer of 1944. The anti-aircraft MG42s are clearly visible on the rear mounts as are the bridging sections on the left vehicle. In 1944 the Germans started using heavy foliage as camouflage for rail transport of combat vehicles, even deep in their own territory, due to allied air superiority. The StuG.III or Panzer III just visible to the right is fitted with the wide winterkette tracks, unusual for the summer.



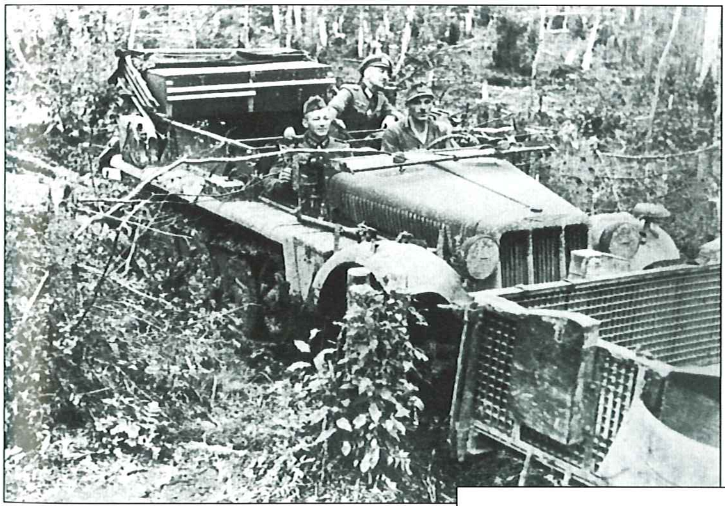
A Unic TU1/U305(f) light half-track with a divisional commander (with white scarf) who is watching with great interest as his soldiers struggle to free the vehicle mired deep in the Russian mud, October 1942. The German Army was the most powerful and modern in the world in the early stages of the war, yet they were still under equipped with softskin vehicles. This was especially evident in Russia in 1941, where most Wehrmacht and Waffen-SS units employed large numbers of different vehicles captured in France. There were dozens of different types of cars and trucks put into frontline service, sometimes even ones that were available to the Germans in small numbers.



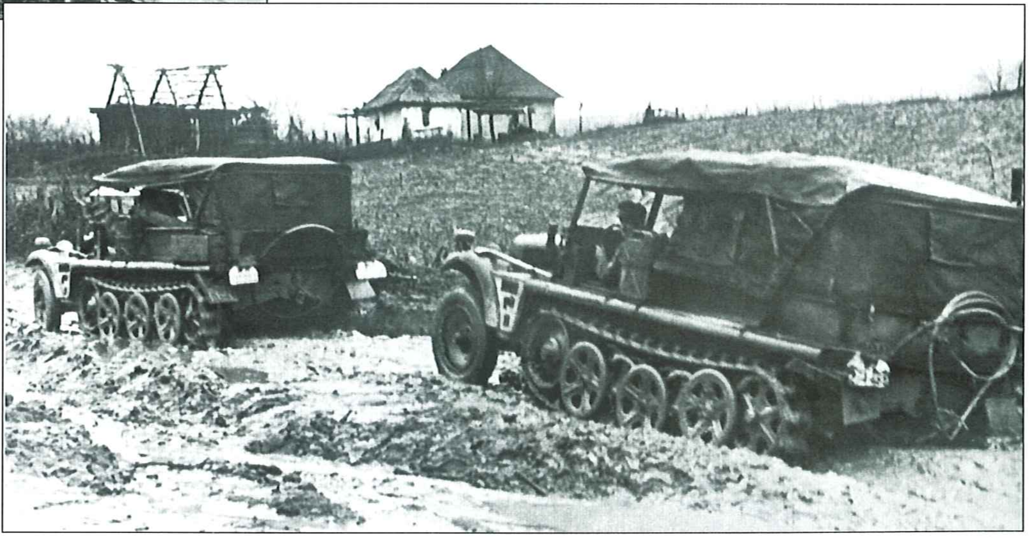
A 5cm PaK 38(sf) auf zugkraftwagen 1 t with armored shields for the engine and driver is leading a column of Sd.Kfz.250 across a field in the Kuban, August 1942. The Sd.Kfz.10 was used mainly as the carriage for the 2cm FlaK 36 anti-aircraft guns in the 10/4 and 10/5 versions, but in 1941 a small number of the Demag D7 were fitted with the 3.7cm Pak 36 anti-tank gun by their crews after their combat experiences of the previous year. Later on, often in field workshops, armored plates were installed on many of them and the armament increased. Here, the censor has removed the long L/60 barrel of the 5cm PaK 38 anti-tank gun.



A Panzerjäger Abteilung equipped with Sd.Kfz.10s and towed 5cm PaK 38s, the barrels of which have been removed by the censor, passing a battery of 8.8cm FlaK 36 guns at work in the Stalingrad area in September 1942. The PaK 38 was still the main anti-tank weapon in the Panzerwaffe at this time as the more powerful 7.5cm PaK 40 had been only in service a few months. The situation was similar with transport - the Sd.Kfz.10 was the most common prime mover in these units as well, mainly due to the high speed and cross country capabilities of this half-track. Seen at the right is a Pz.Kpfw.III Ausf.J.

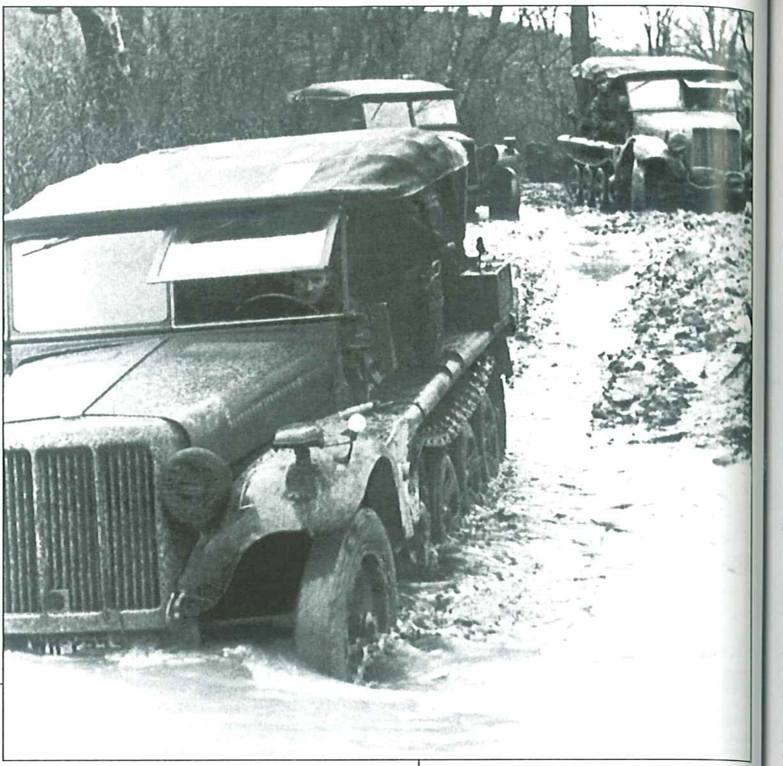


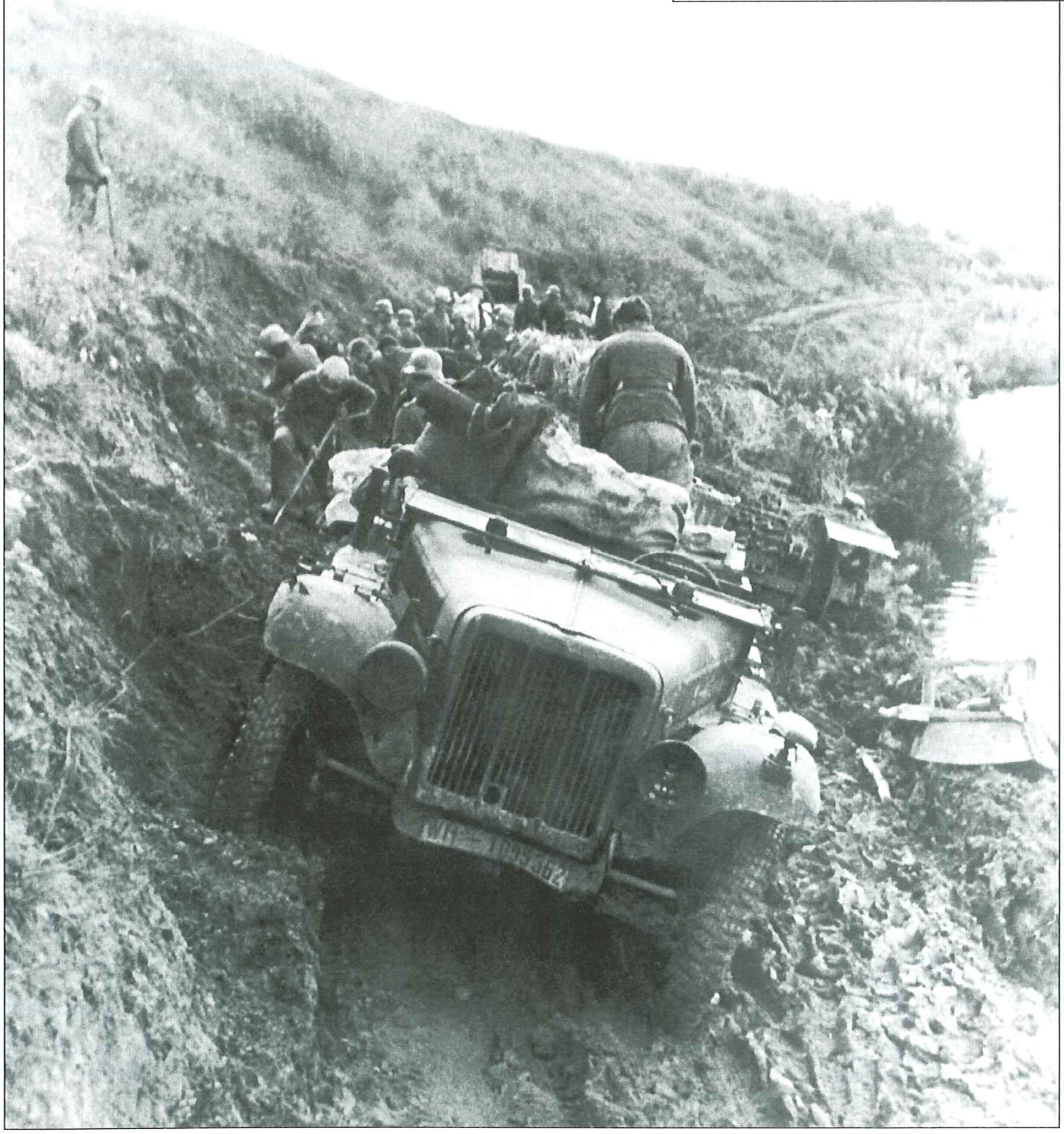
The standard transport version of the Sd.Kfz.10 following the anti-aircraft version of the same type of half-track, either an Sd.Kfz.10/4 or 10/5, Volchov area, September 1942. During wet weather, half-tracks, especially the light ones, were the best form of transportation and so were very often employed by various staffs in the divisions.



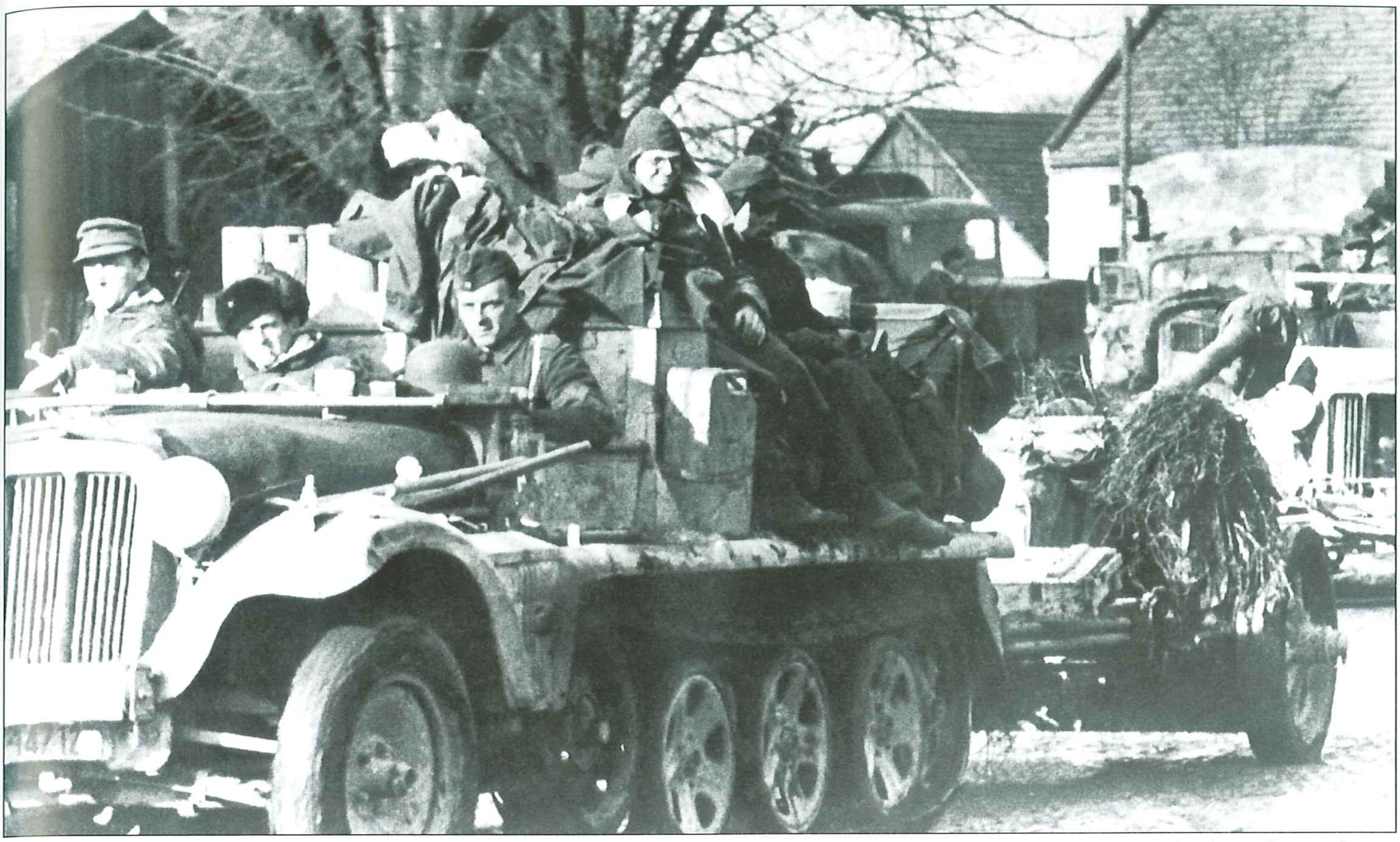
A pair of Sd.Kfz.10s struggle along a muddy road through a Soviet village in the Northern Caucasus in the autumn of 1942. The zugkraftwagen 1 ton was a light but effective vehicle, with a powerful engine and rugged suspension that made it more useful in some situations than the heavier prime movers of the German Army. It was built in large numbers during the war and used throughout the Wehrmacht as a transport and towing vehicle for light artillery.

A trio of Sd.Kfz.10s crossing a river somewhere in the southern sector of the Eastern Front in the autumn of 1942. The Zgkw 1 t weighed 3.4 tons and could carry a load up to 1.5 tons or a squad of 8 men. It was one of the most numerous prime movers in the Wehrmacht with some 25,000 vehicles produced during the war.

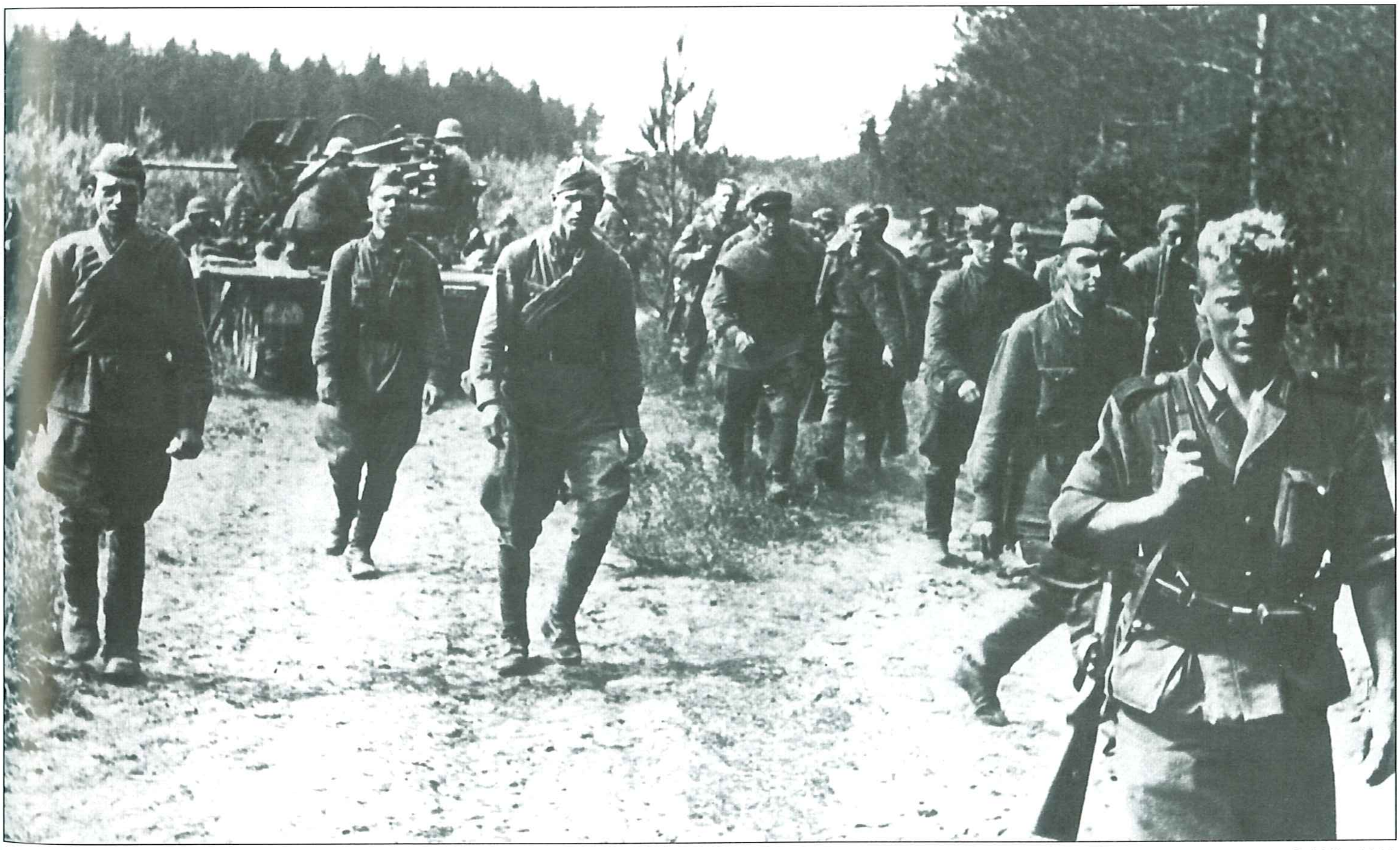




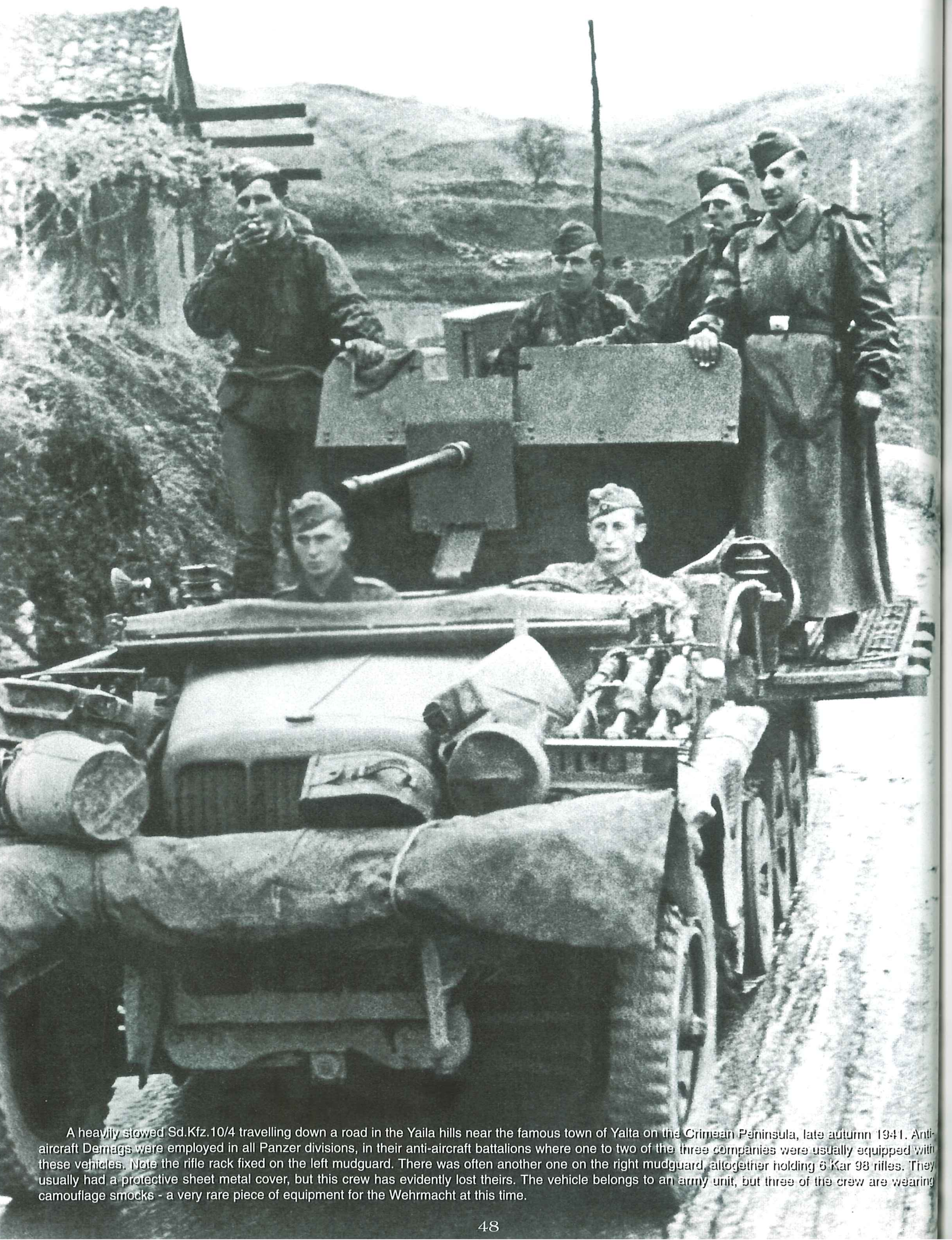
An Sd.Kfz.10 tractor helps to recover a heavily camouflaged early StuG.III that has thrown a track along a lake or river in the Lake Ilmen area, May 1943. The light prime mover has the license plate WH-1099362 and has no other markings. The photo shows very well that the windshield lies on the hood supported by the windshield wipers.



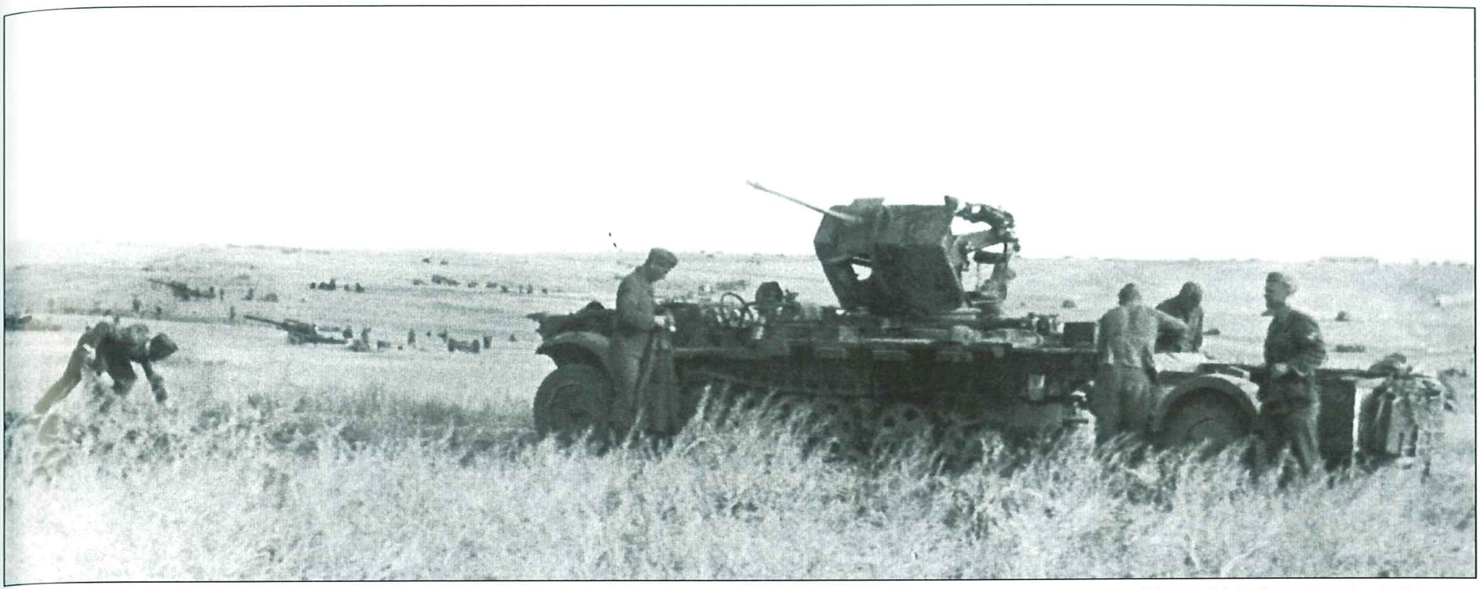
In early 1945, the Panzerwaffe strongly resisted Soviet troops along the Oder River, especially south of Breslau (now Wrocaw), when 1.Panzer-Armee held the line with 6 divisions including 8., 16. and 19.Panzer-Divisions of XXIV Panzer-Korps. In the photo are vehicles of a Panzerjäger Abteilung which may have belonged to one of these divisions. The two Sd.Kfz.10s towing 7.5cm PaK 40s are camouflaged with white paint and carry a large quantity of supplies and the crews belongings, typical for about the last 18 months of the war due to the reduction of the logistical organization of the Wehrmacht.



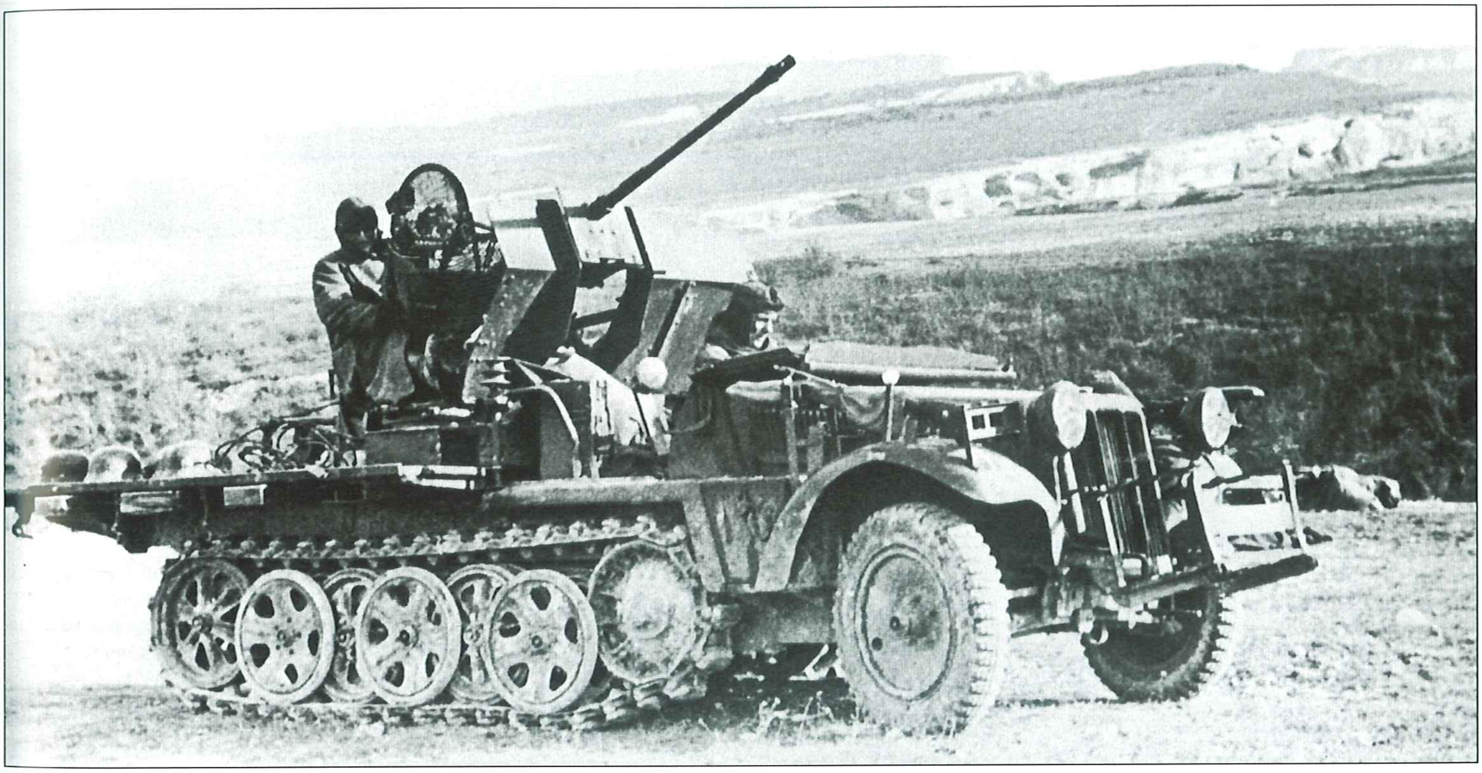
During an early period of the war in the Soviet Union in 1941, a group of Soviet POWs are being marched into captivity, passing near an Sd.Kfz.10/4 with its 2cm FlaK 38 fully depressed to engage ground targets. The FlaK 38 was very useful against light armored targets because the armor piercing Pz.Gr.40 could penetrate 20mm plates at a range of 500 meters.



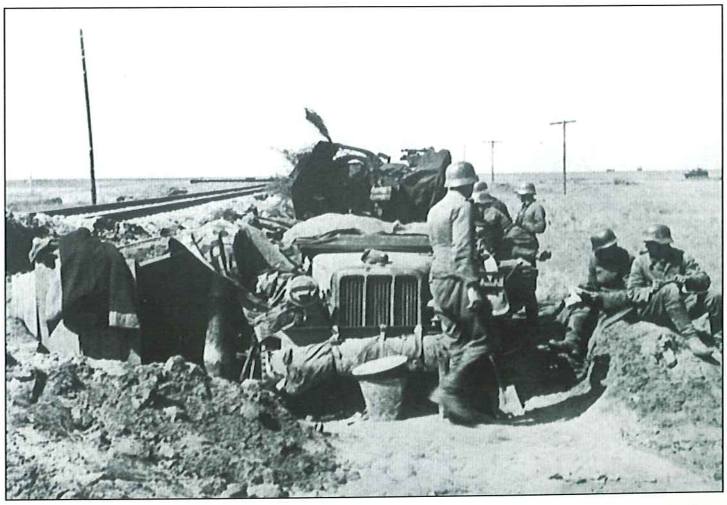
A heavily stowed Sd.Kfz.10/4 travelling down a road in the Yaila hills near the famous town of Yalta on the Crimean Peninsula, late autumn 1941. Anti-aircraft Demags were employed in all Panzer divisions, in their anti-aircraft battalions where one to two of the three companies were usually equipped with these vehicles. Note the rifle rack fixed on the left mudguard. There was often another one on the right mudguard, altogether holding 6 Kar 98 rifles. They usually had a protective sheet metal cover, but this crew has evidently lost theirs. The vehicle belongs to an army unit, but three of the crew are wearing camouflage smocks - a very rare piece of equipment for the Wehrmacht at this time.



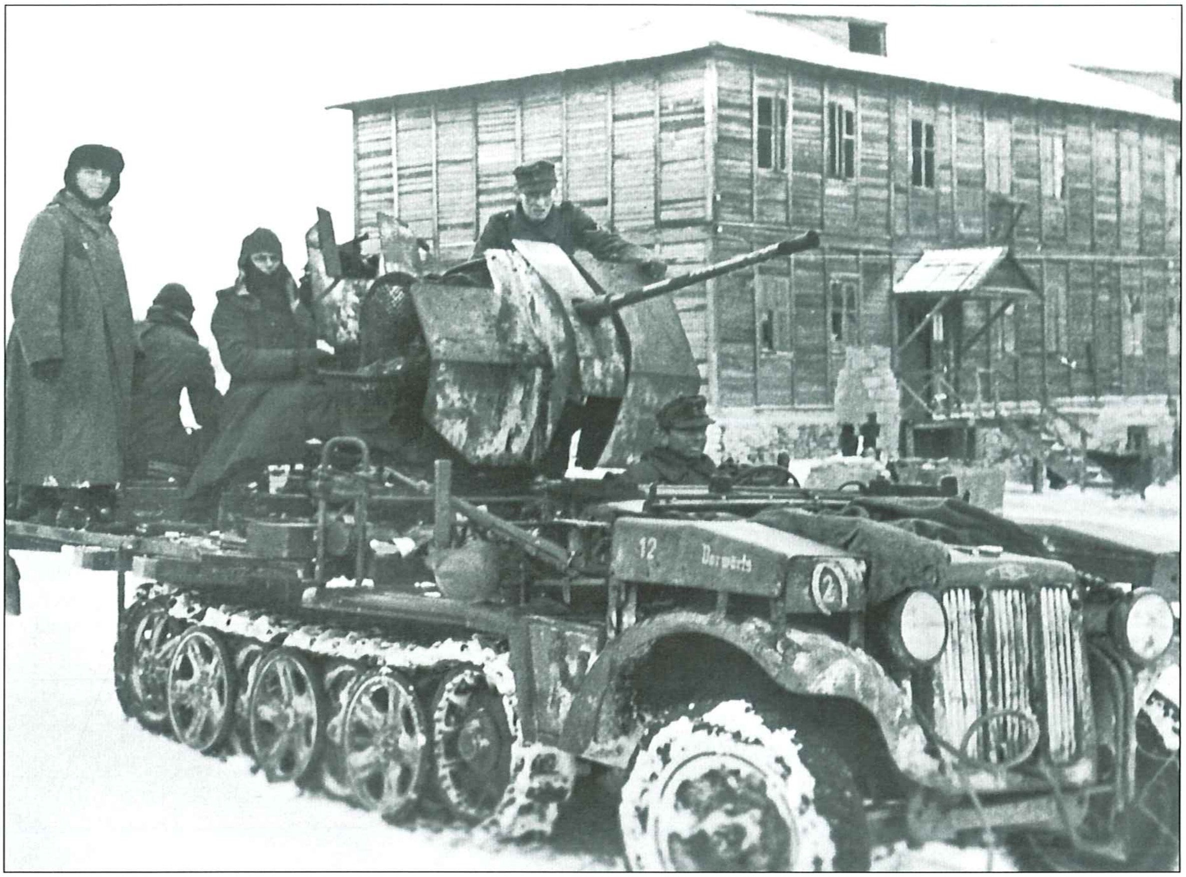
An Sd.Kfz.10/4 with an ammo trailer guarding a heavy artillery position in the Stalingrad area in September 1942. The vehicle is not protected in any way and not even camouflaged - a sign that Soviet air attacks were ineffectual during this battle. There had been over 12,000 Sd.Kfz.10 and 10/4 built by December 1942. Most of the 10/4 were incorporated into independent anti-aircraft companies and battalions of Germany's military forces.



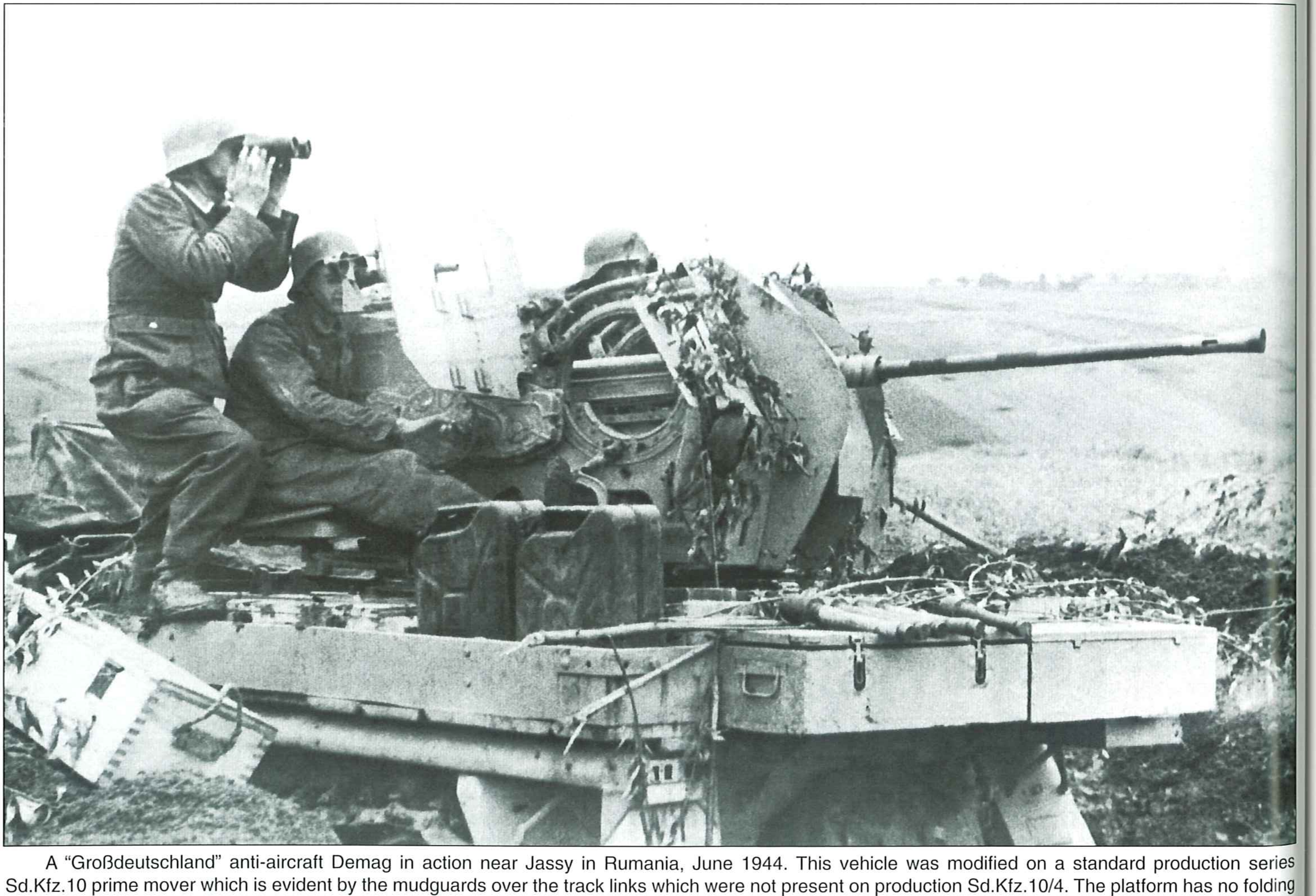
A frozen crew of a self propelled anti-aircraft gun waiting for the enemy to appear somewhere in the Crimean Peninsula, December 1942. The first Demag D7 with 2cm FlaK 30 were introduced into frontline units in early 1939, and so saw service in Poland in September that year. The vehicle had a totally different rear compartment than the standard version of the Sd.Kfz.10, as the seating for the 8 men squad was replaced by a platform for the gun. In this configuration, the vehicle was designated Sd.Kfz.10/4 and when the armored cab was added, Sd.Kfz.10/5. Produced in large numbers, it was the most common anti-aircraft vehicle in the Wehrmacht during WWII.



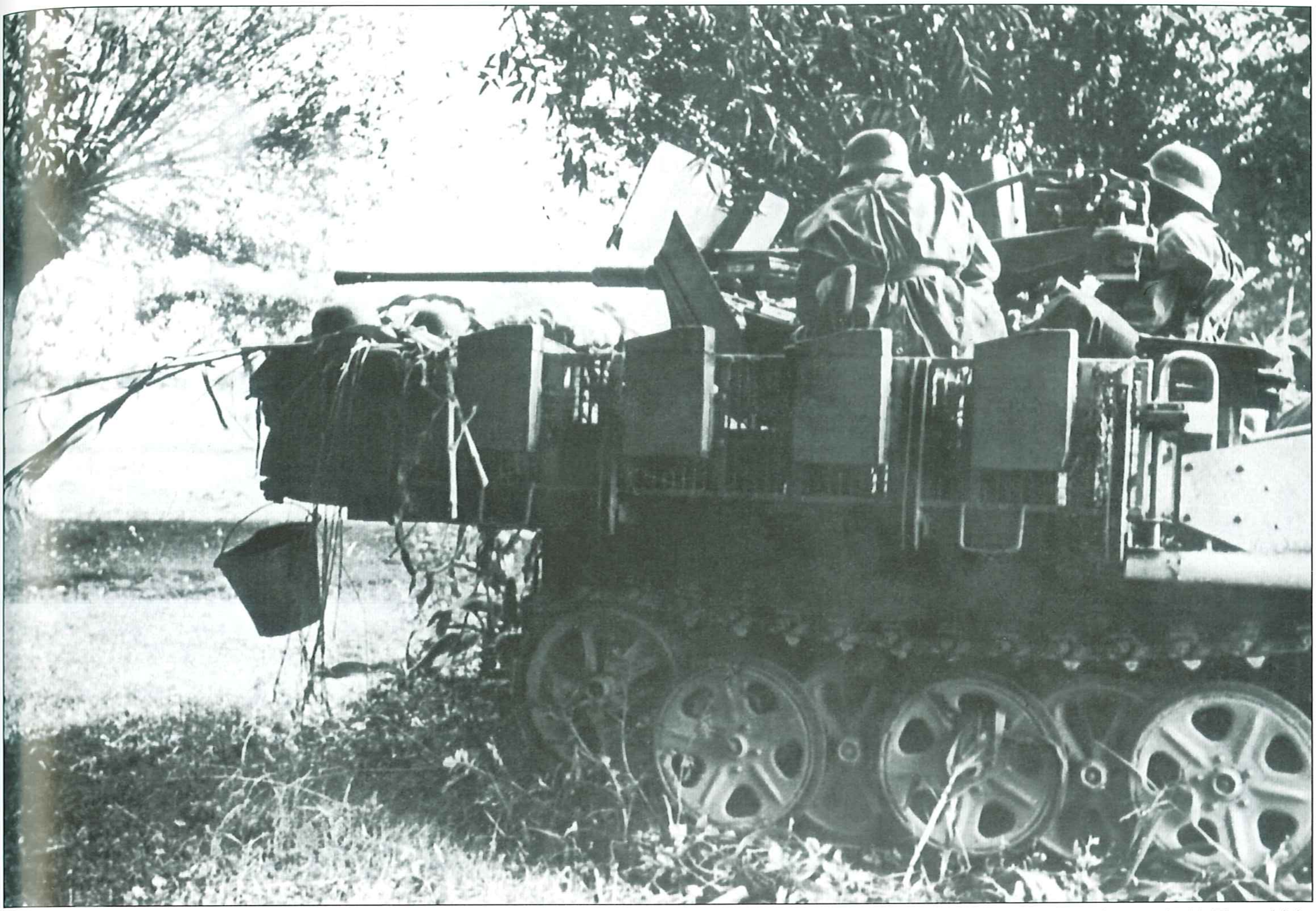
It looks like this photo may have been taken in North Africa, but in fact this FlaK crew was photographed in the Stalingrad area in August 1942. The Sd.Kfz.10/4, which belongs to an independent anti-aircraft battalion, is guarding the railway line to Stalingrad, the only track that connected 6.Armee to the rear areas of Heeresgruppe B in the Rostov-on-Don area. The anti-aircraft battalions were organized with 3 companies of 3-4 batteries each and there were often periods they took part in ground combat more frequently than in their anti-aircraft role. It appears they have been at this location for some time.



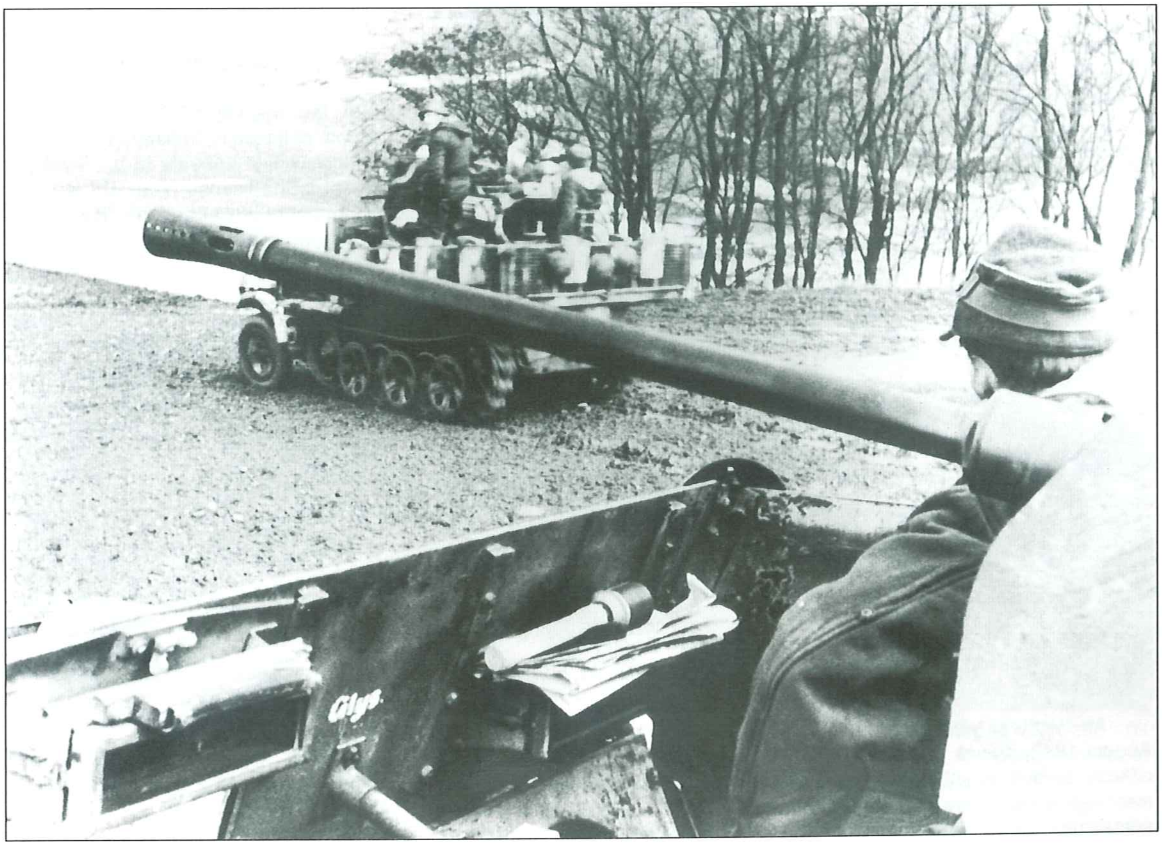
Another Sd.Kfz.10/4 anti-aircraft vehicle photographed somewhere in the Kharkov area, March 1943. The 2cm FlaK 38 gunshield was originally covered with a white winter camouflage which has been worn off after months of prolonged frontline service, especially those areas that were in continual contact with the hands of the crew. The sides of the gun platform were always down when the vehicle was in action because there was not enough room around the gun and the space was needed for the crew members supplying ammunition to walk. Note the markings on the right mudguard. The number "12" could be the number of the vehicle in the anti-aircraft company while the inscription "Vorwarts" (forward) was painted by the crew as a personal name.



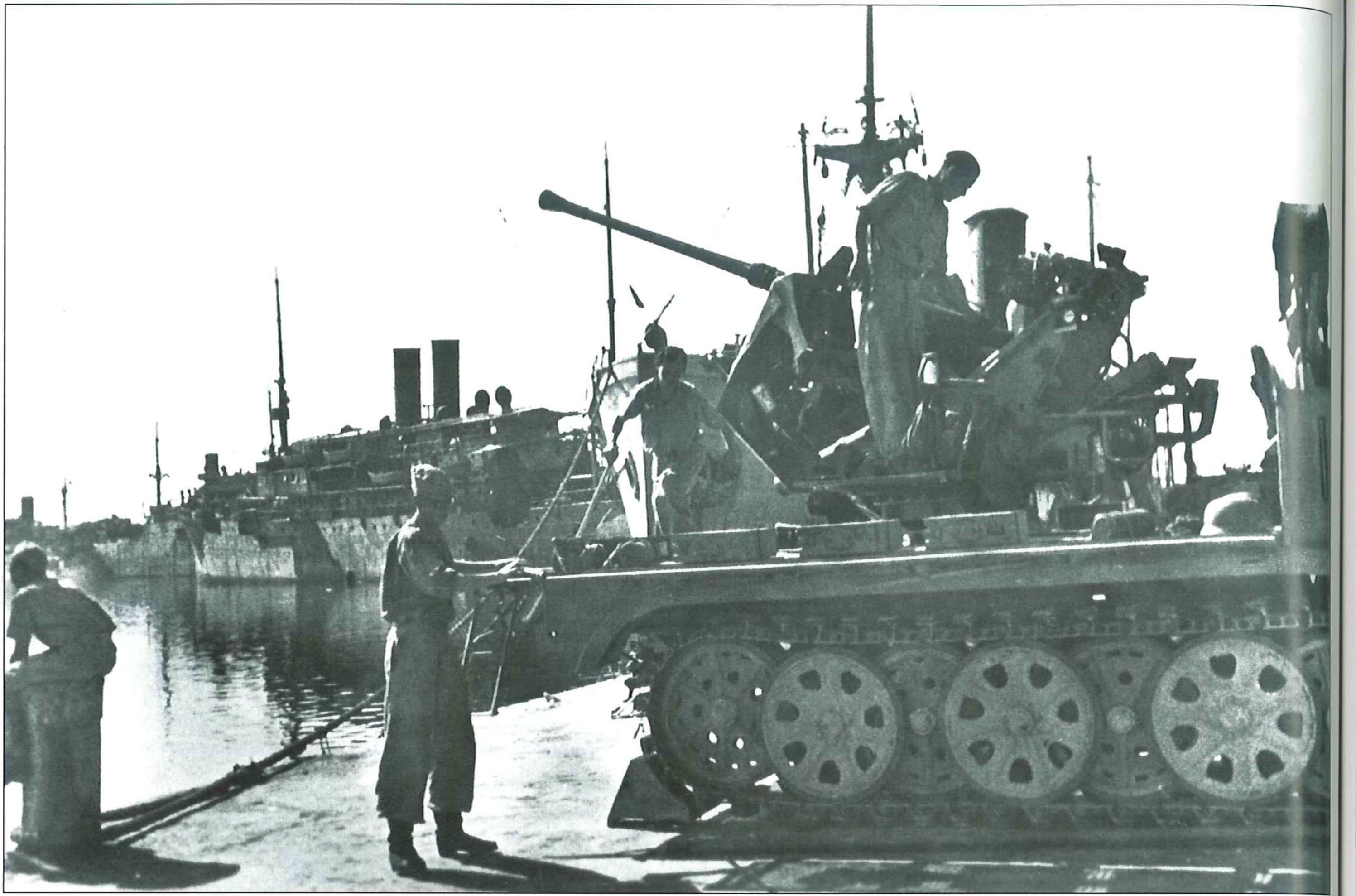
A "Großdeutschland" anti-aircraft Demag in action near Jassy in Rumania, June 1944. This vehicle was modified on a standard production series Sd.Kfz.10 prime mover which is evident by the mudguards over the track links which were not present on production Sd.Kfz.10/4. The platform has no folding sides and is built of wood indicating it was probably a field workshop improvisation. The half-track and gun is painted in an overall sand color without any form of additional camouflage.



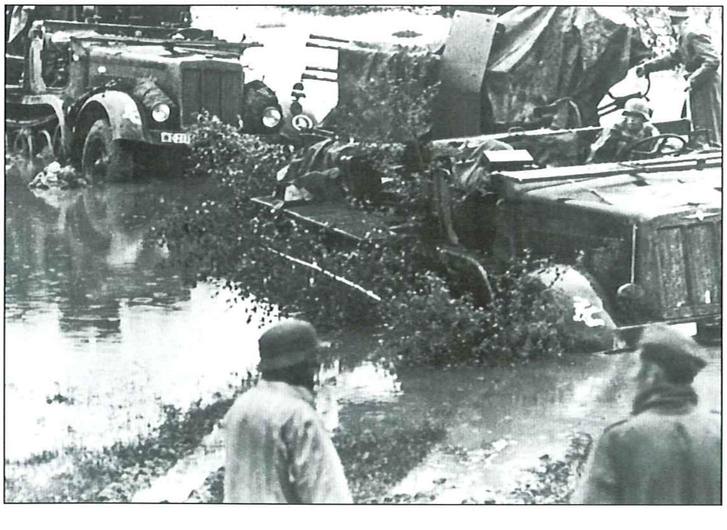
The rear of an anti-aircraft Demag involved in the support of ground troops in the village of Studzianki, not far from Warsaw, in August 1944. The vehicle belongs to Fallschirm-Panzer-Division "Hermann Göring". This division was considered an elite division of the Panzerwaffe due to the high quality of recruits within its ranks and the priority given in its equipment. This Sd.Kfz.10/5 is equipped with an armored cab. The sides of the platform are in the raised position which may indicate they are not actively engaged in combat.



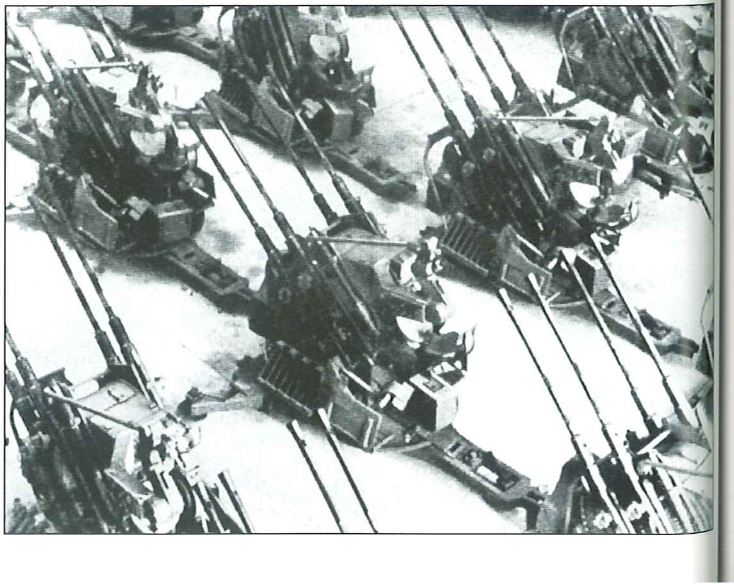
"Großdeutschland" anti-aircraft Demags with armored cabs marching across a field in East Prussia, autumn of 1944. Note the interior details on the inside of the armored cab of the nearest half-track, including the driver's armored glass vision block and the inscription "Alys" painted in white to the right. The vision blocks could be slid up and fixed with a wing nut to provide better visibility in non-combat situations. The top of the vehicle commander's vision block is being used as a ledge for stowing maps, with an M43 stick grenade as a paper weight. There were 5 companies, with an additional battery in the HQ company, of anti-aircraft half-tracks, all of them either Sd.Kfz.10/4s or 10/5s. There were also 3 heavy companies with 8.8cm FlaK 36/37 and 2 medium companies with 3.7cm and quadruple 2cm anti-aircraft guns on half-tracks, so the unit had very strong anti-aircraft defenses.



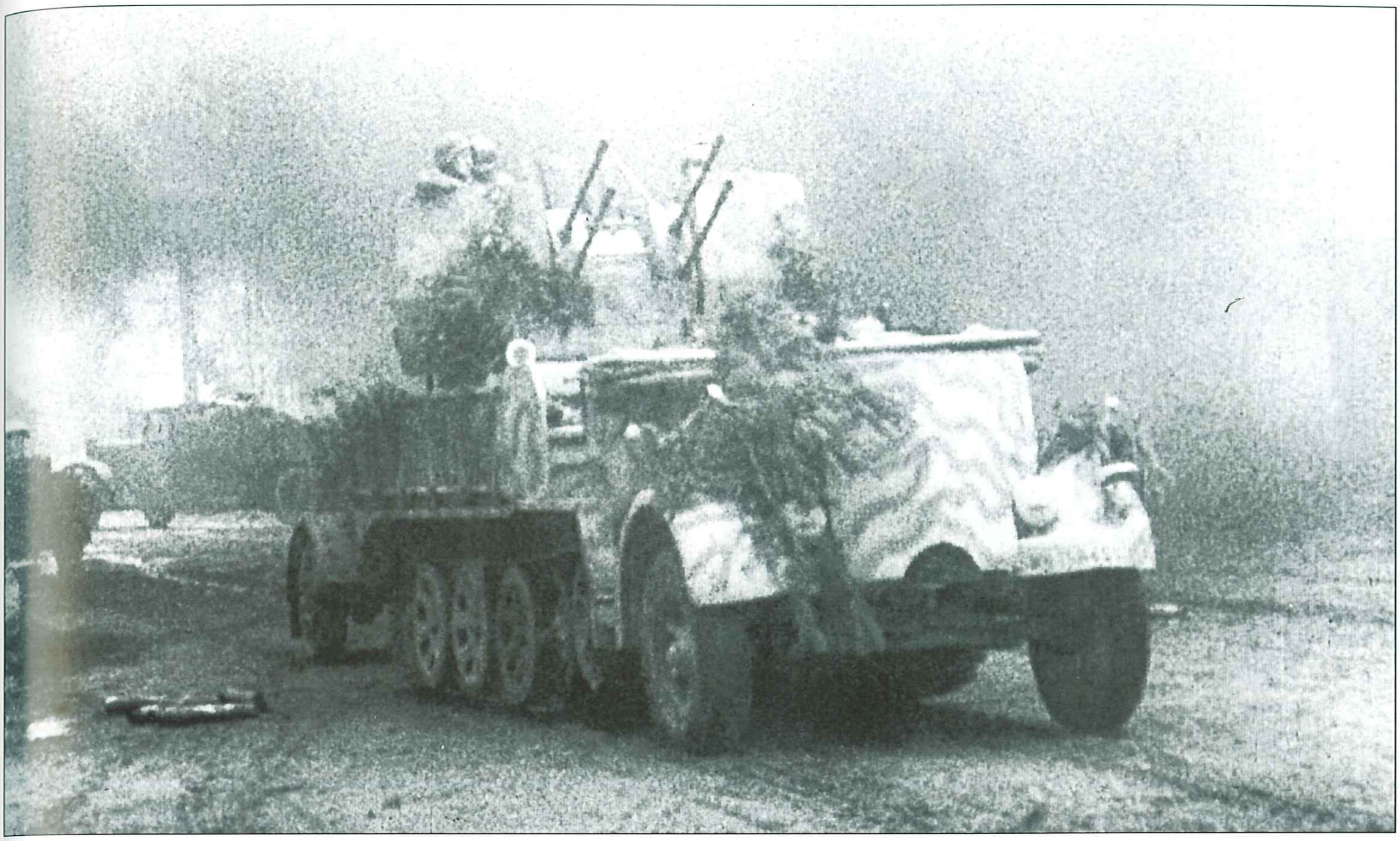
The anti-aircraft Sd.Kfz.7/2 consisting of the medium prime mover and the 3.7cm FlaK 36 anti-aircraft gun. The vehicle was less common than the Sd.Kfz.10/4 (ratio 1:3) and this version was rather very rare up to the end of 1942. Here we see one of these vehicles from an independent Luftwaffe AA battalion on harbor defense in Southern France in November 1942. The crew members have tropical uniforms and the half-track is painted in overall sand. Note the boxes of ammunition and crew equipment fixed to the lowered sides.



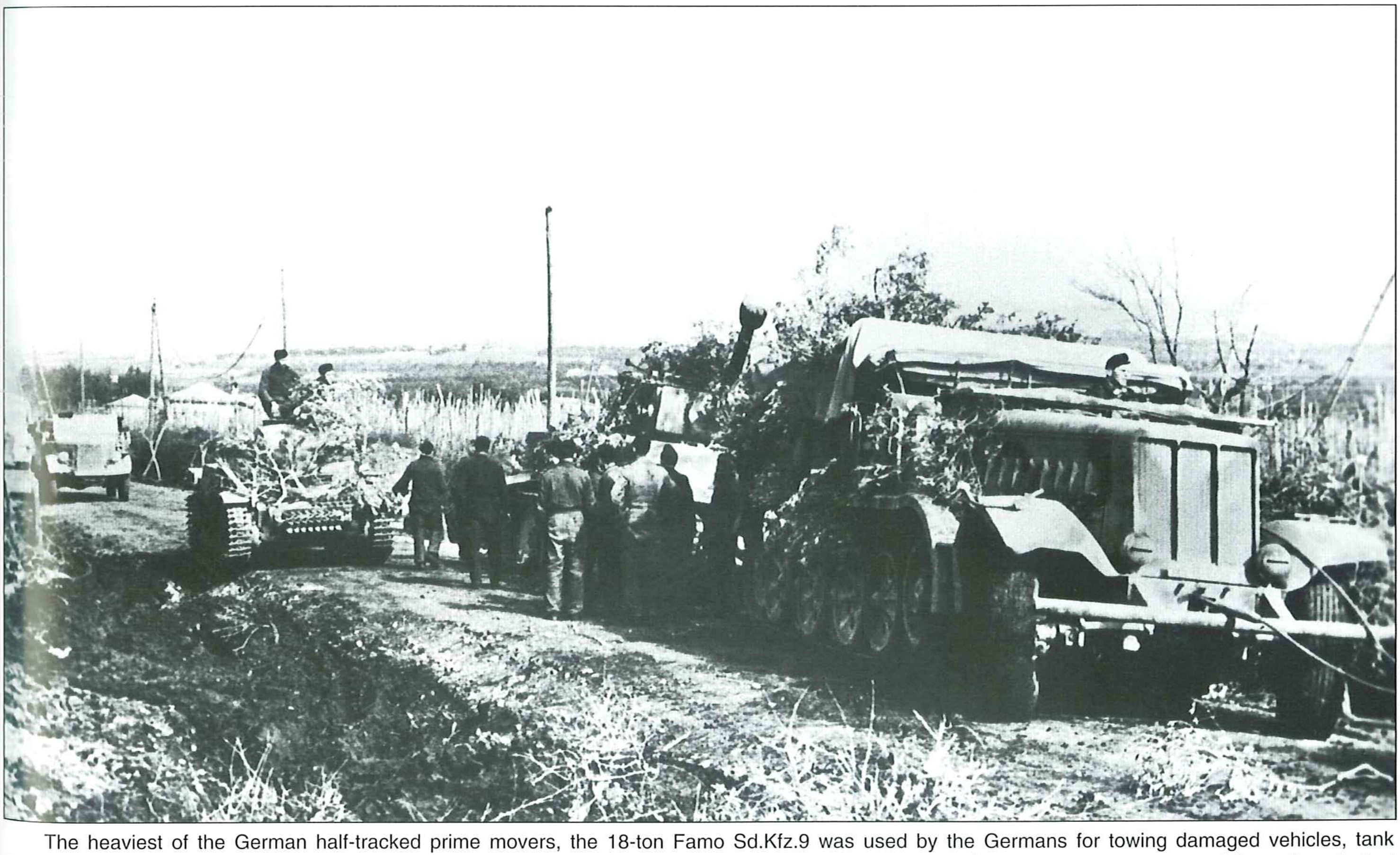
A pair of medium anti-aircraft half-tracks from 11.Panzer-Division crossing a river in Russia in June 1942. Judging from the stillness of the water, the first vehicle has bogged down. Both the Sd.Kfz.7/1s have the emblem of the division painted on the left mudguard and another emblem on the right, which appears to be a yellow swan in a white circle. Of special interest is the license plate of the vehicle in the background with the WL (Wehrmacht Luftwaffe) code. The crew also have Luftwaffe eagles on their helmets which also clearly indicates their Luftwaffe origins. The emblem on the right mudguard could be the emblem of this unit.



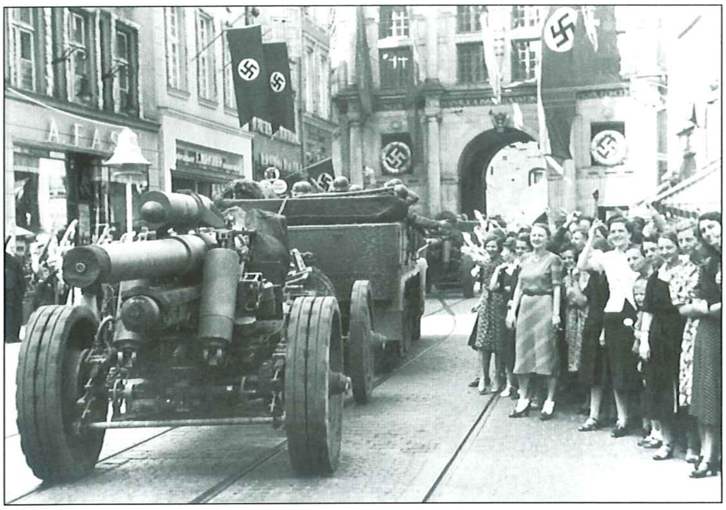
An overhead view of several 2cm Flakvierling 38 stored in a factory, in August 1942, shows many details of the upper parts of the guns usually difficult to see in other photos. These weapons, with factory installed armored shields, were installed on the Sd.Kfz.7 prime movers and sometimes, though rarely, installed on wheeled, medium transport trucks.



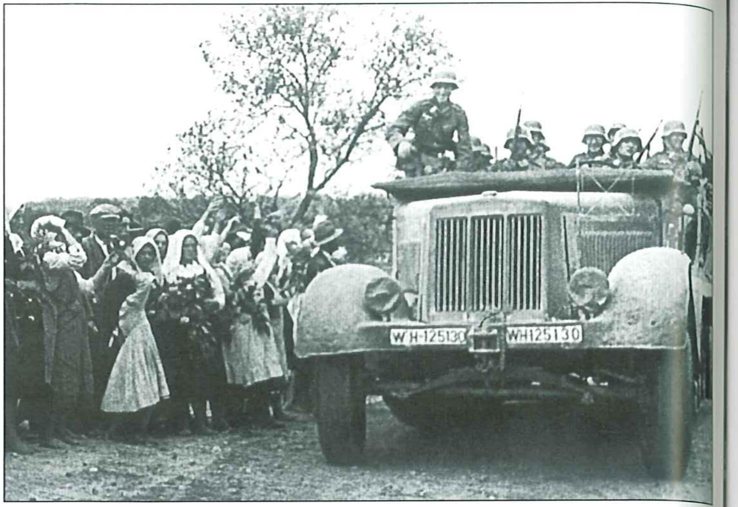
An Sd.Kfz.7/1 camouflaged with foliage and painted with a wavy green pattern on an overall sand base passing burning houses in a city recaptured from Soviet hands somewhere on the Polish-Russian border, summer 1944. The same pattern has been applied on the trailer as well as the half-track, which bears a "WH" prefix license plate. This vehicle is unusual in that it is only partially armored.



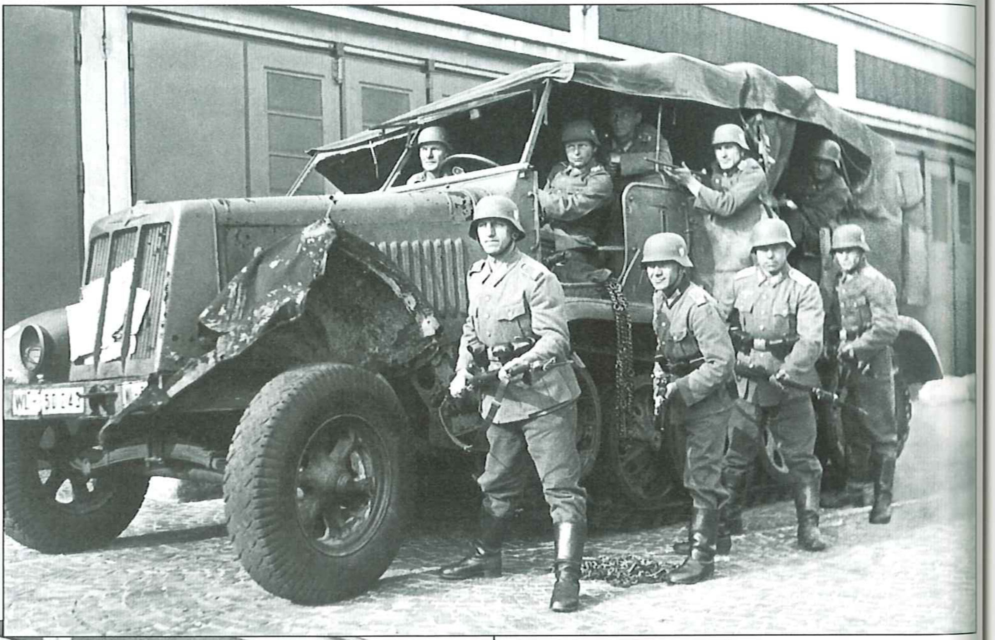
The heaviest of the German half-tracked prime movers, the 18-ton Famo Sd.Kfz.9 was used by the Germans for towing damaged vehicles, tank transporter trailers and large caliber guns, with the exception of a few converted to carry the 8.8cm FlaK 36/37. Here we can see one of these "heavies" at work, employed by sPz.Abt.508 in the Nettuno area in Italy, late May 1944. The powerful engine of this half-track alone wasn't strong enough to tow a Tiger I by itself and often 3 vehicles were required, even on good roads. Note the camouflage on this vehicle, most likely a brown pattern over the sand background. The massive size of this vehicle is apparent when compared to the diminutive Panzer II passing on the left.

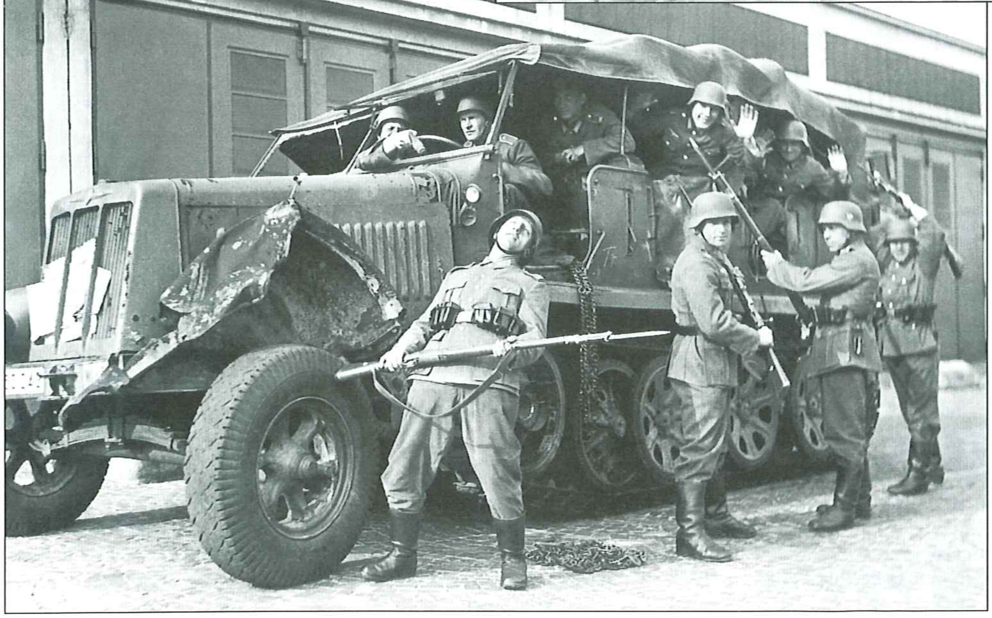


Heavy 15cm sFH 18 howitzers towed by Sd.Kfz.7 prime movers travel down a road lined with jubilant German citizens in the city of Danzig (Gdansk) in September 1939, after its "liberation" in the first days of the war. The standard artillery battalion in each division during this period was organized into 3 batteries, including 2 heavy ones. Each heavy battery consisted of 4 sFH 18 howitzers towed by trucks in infantry divisions and prime movers in Panzer divisions. Altogether, there were 10 cross-country cars, 9 motorcycles, 10 trucks and 4 half-tracks in each battery.

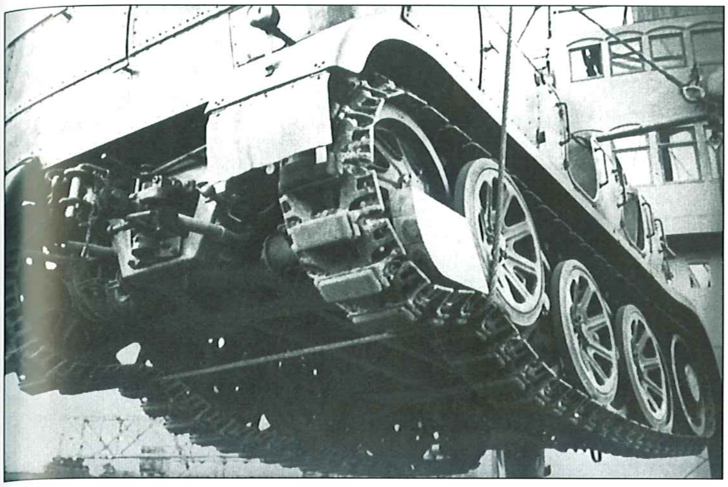


An Sd.Kfz.7 of an artillery unit travelling in Western Poland in September 1939, where many German nationals had their homes and welcomed the Wehrmacht soldiers as liberators. Note that the prime mover has no markings but carries the frame for a pennant attached to the body just behind the headlights.

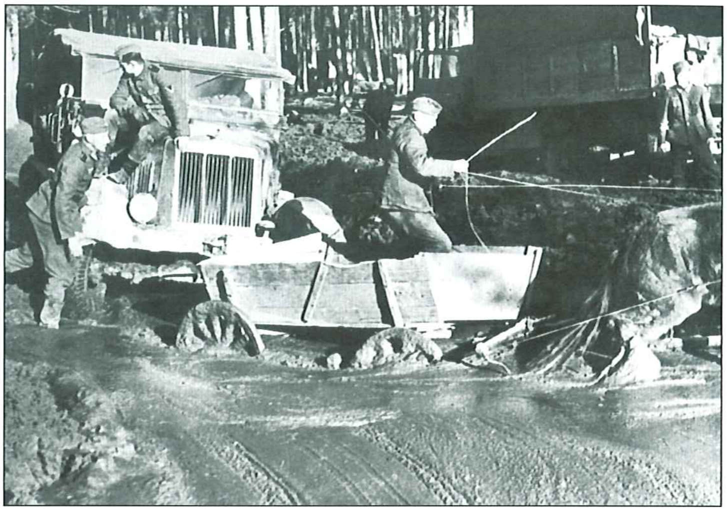




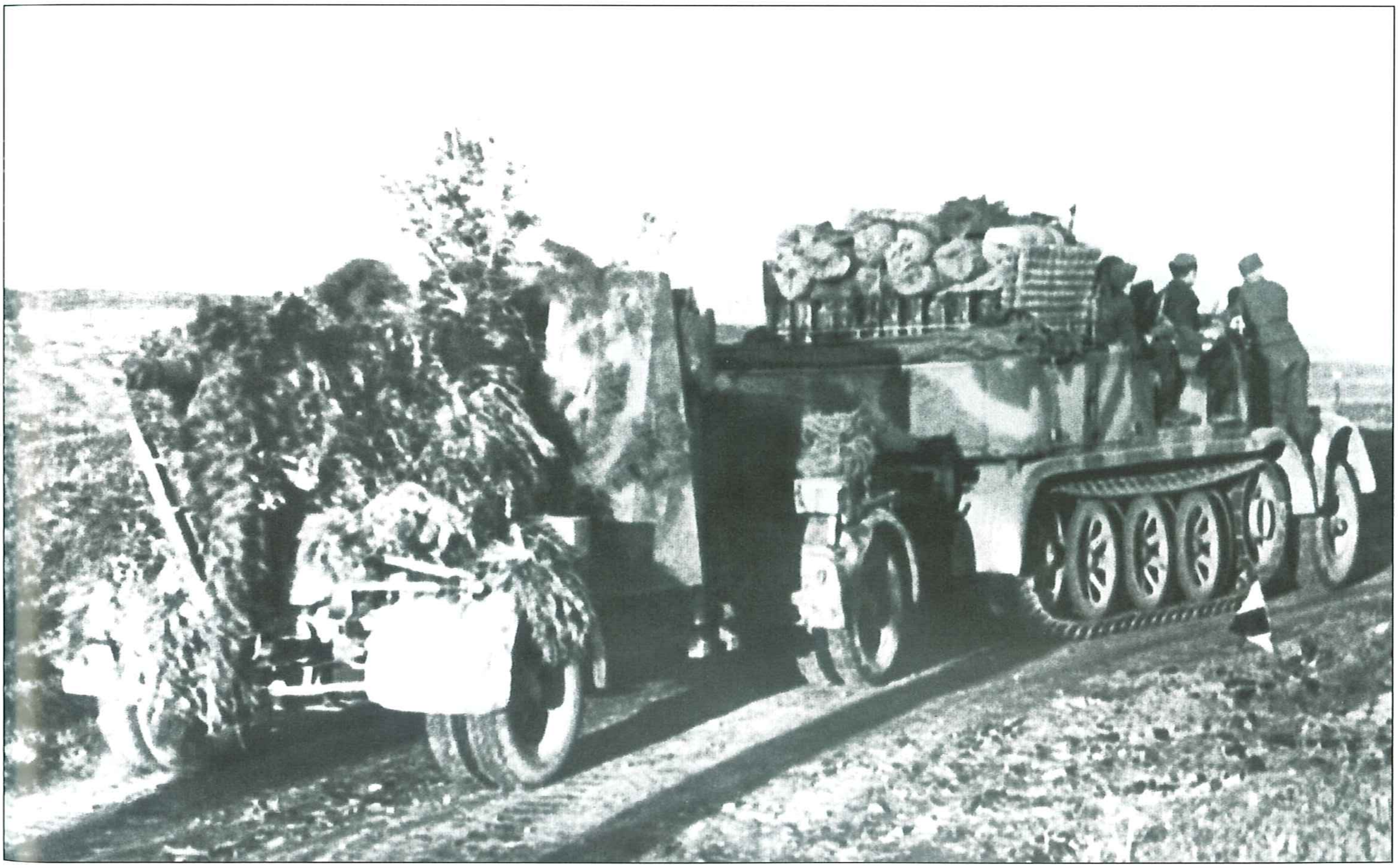
Two shots of a damaged Sd.Kfz.7 taken at a training camp in Germany. The field gray collars and shoulder straps on some of the uniforms suggest the date to be sometime in 1943. The half-track belonged to a Luftwaffe unit as is evident by the "WL" license plate, though the men are from an army unit. On the left mudguard, an emblem is visible but impossible to identify. More interesting than the vehicle though, are the antics of the soldiers in the lower photo, including one pretending to have been shot. Part of the crew seems to have low morale as they are practicing their surrender procedures. The soldier with the "X" mark above him is a Pole who was drafted into the German Army as a "Volksdeutsch".



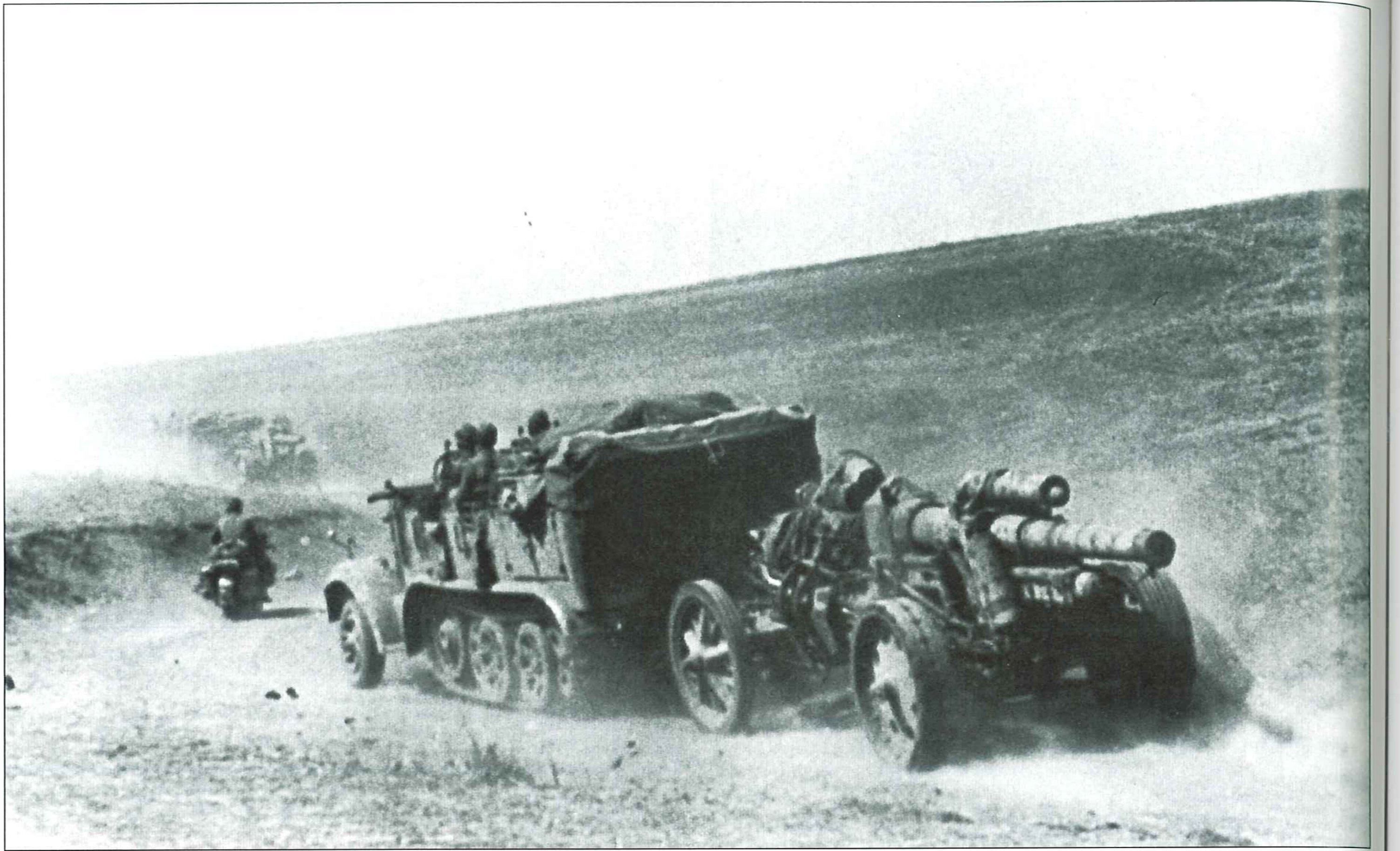
A view of the lower rear end of an Sd.Kfz.7 prime mover being unloaded from a ship in a Norwegian port in April 1940. As can be seen in the photograph, the chassis was of simple construction but had proved itself very rugged in service. Note how the wood blocking transfers the weight of the vehicle to the axle of the rear idler wheel.



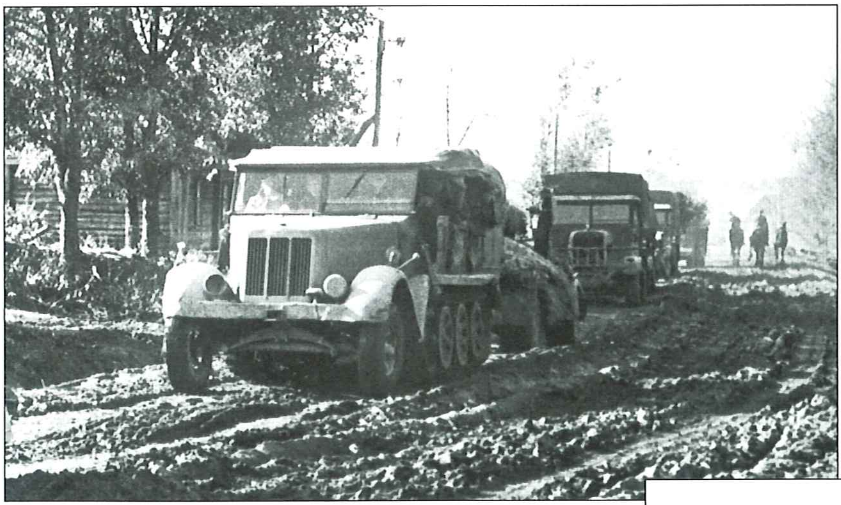
Probably nothing else could better illustrate the conditions encountered in the spring and autumn seasons in the Soviet Union during the war years. The so called "panje" horse drawn wagons, a typical form of transportation for the Russian peasant, very often were the only vehicles that could move in situations like this. The wagon and driver is far better equipped to get through than the Sd.Kfz.7 in the background preparing to cross this river of mud in the Lake Ilmen area, May 1942.



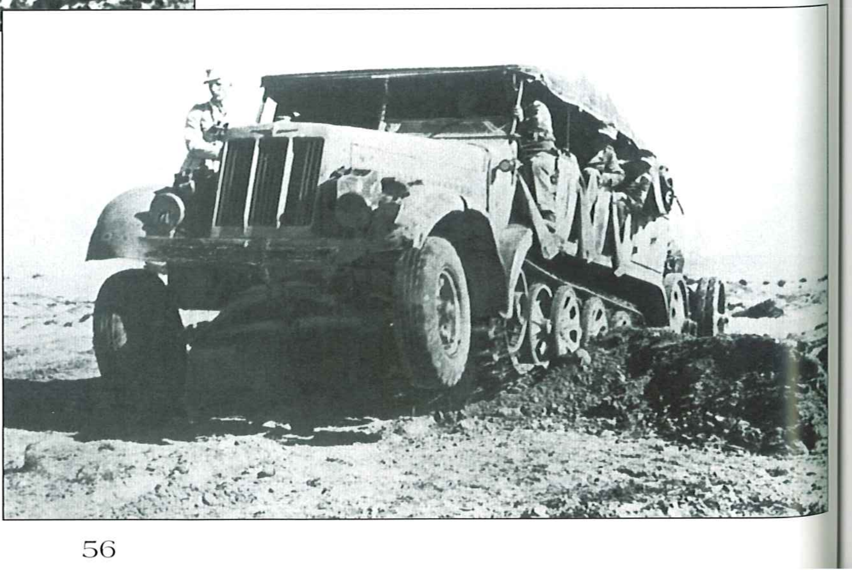
A Sd.Kfz.8 loaded with the personal gear of the crew and 10 additional jerry cans, towing a heavily camouflaged 8.8cm FlaK 36/37 anti-aircraft gun across the expanses of the southern Soviet Union in the late summer or early autumn of 1942. The half-track is painted with a camouflage pattern that was standard for Wehrmacht vehicles at the time. It is composed of an irregular sand color applied on the sides and top of the vehicle. Introduced in the early summer of 1942, it was intended to break up the very dark, solid gray shape of the vehicle. Note the divisional HQ command pennant stuck in the ground beside the road.



An Sd.Kfz.7 towing a 15cm sFH 18 howitzer across the steppes in the Stalingrad area, September 1942. In the background, another similar artillery team can be seen. Note the sand colored camouflage pattern on the gun barrel applied over the dark gray background.

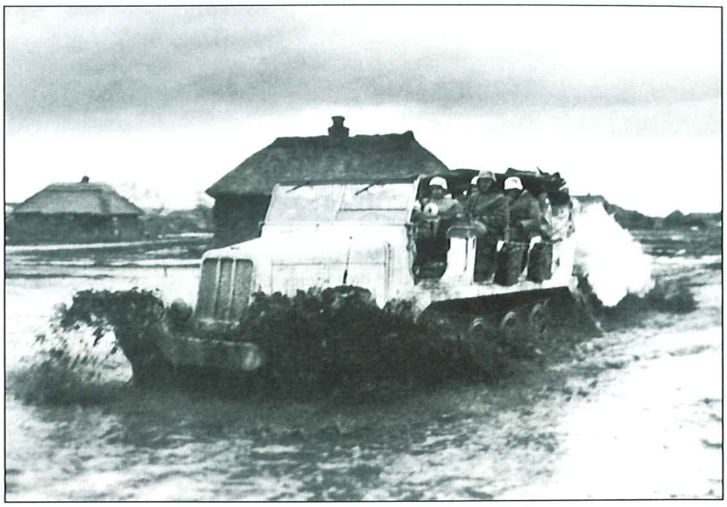


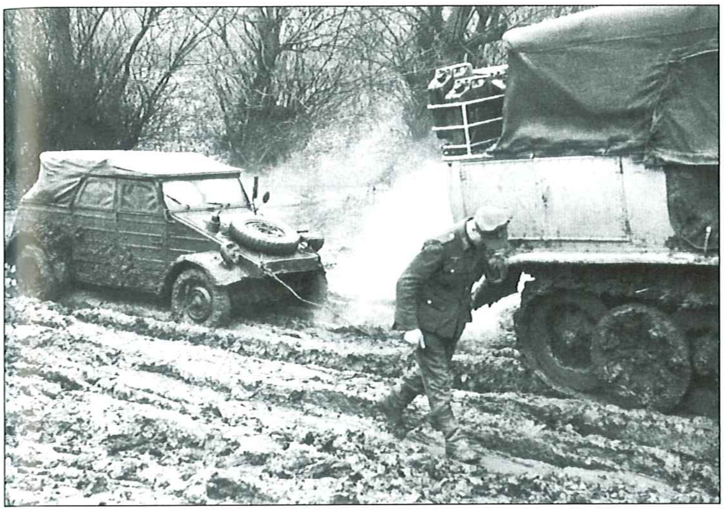
An Sd.Kfz.7 with an 8.8cm FlaK 36/37 marching in column order together with other soft skin vehicles somewhere in the central Soviet Union, October 1942.



An Sd.Kfz.7 towing a 15cm sFH 18 howitzer across the desert in Tunisia, March 1943. Most vehicles used in North Africa were generally laden with many additional jerry cans, mainly for water. As seen in other photographs, many half-tracks like this had additional jerry can racks fixed to the sides of the vehicle between the doorways to provide more room inside the vehicle. This half-track has not been modified in this way, so two additional water cans (note the white crosses) have been stowed between the engine cover and mudguard. There is a small two color concentric circle painted on the front of each mudguard that may be some kind of unit identification marking.

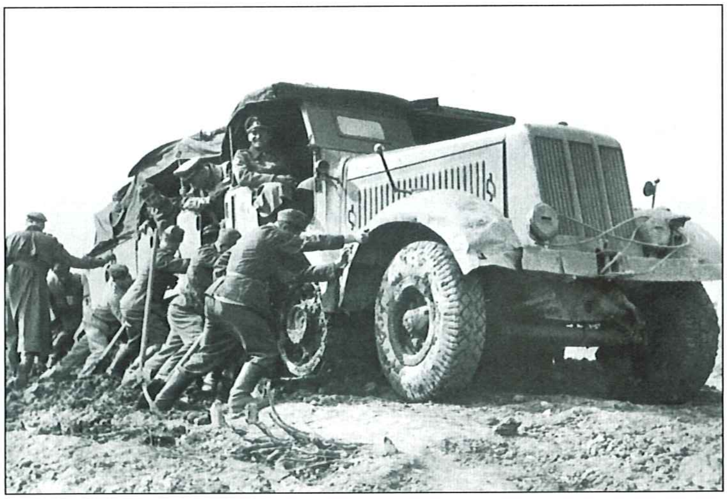
An Sd.Kfz.7 from Panzer-Grenadier-Division "Großdeutschland" charges across a flooded stream during its march to Kharkov, March 1943. The half-track is still covered with white winter camouflage paint even though the landscape has turned to muddy brown. The camouflage is very new and had been applied when the canvas cover top was spread over the crew compartment - note the dark gray paint visible between the doorways. This half-track carries additional jerry cans as seen on the vehicles in North Africa.

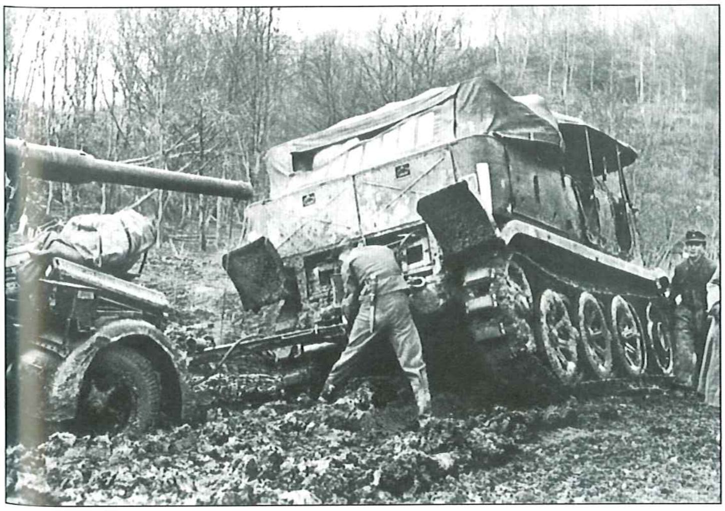




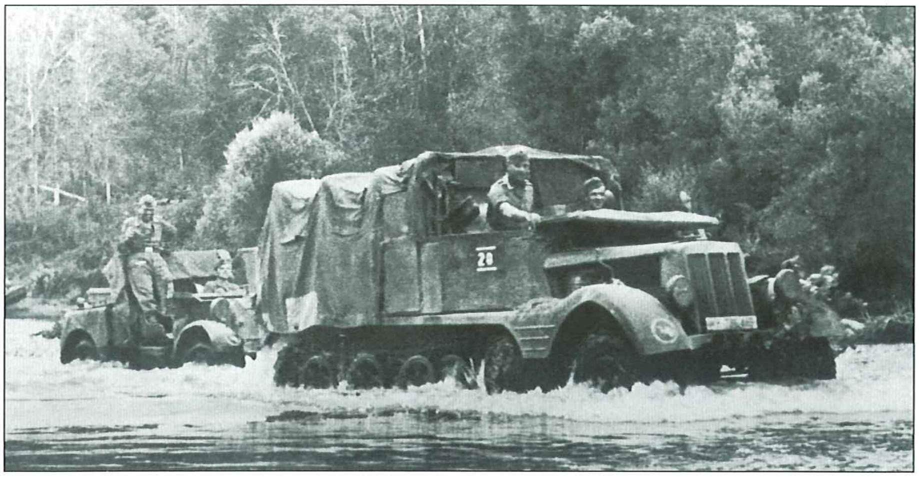
Medium or heavy prime movers were very often used to assist smaller wheeled vehicles to negotiate difficult roads, as is the case with this mud covered Kübelwagen being helped out by an Sd.Kfz.7, in the autumn of 1943. The crew of the half-track was protected against the elements by a canvas top that was fixed around the rear of the vehicle and to the top of the windshield. The cover and two part canvas doors were of little use against the extreme cold encountered in Russia though.

This must be the Army - the ordinary soldiers push the half-track while the high ranking officers sit and smile for the camera! It was not uncommon for officers to use heavy vehicles instead of lighter, more economical personnel cars, for trips in their sectors. In this case, it did not help much because even this Sd.Kfz.8 is bogged down in the mud in the Lake Ilmen area, despite its powerful Maybach HL 85 TUKRM 185 hp motor. Visually, there is not much difference in the Sd.Kfz.7 and Sd.Kfz.8, making them difficult to tell apart, other than the shape of the holes in the roadwheels and the tire size. Note the armored windscreen.

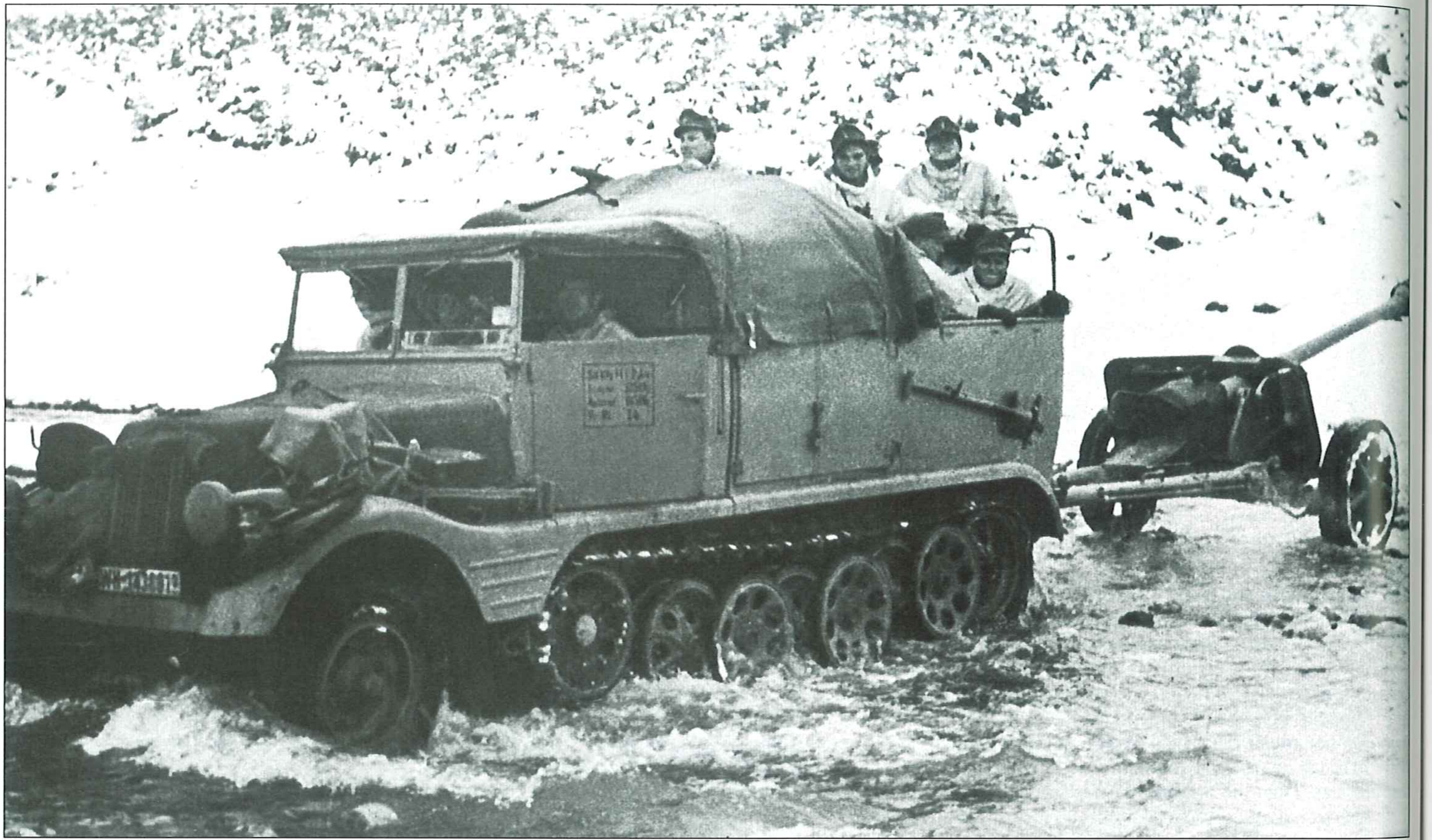




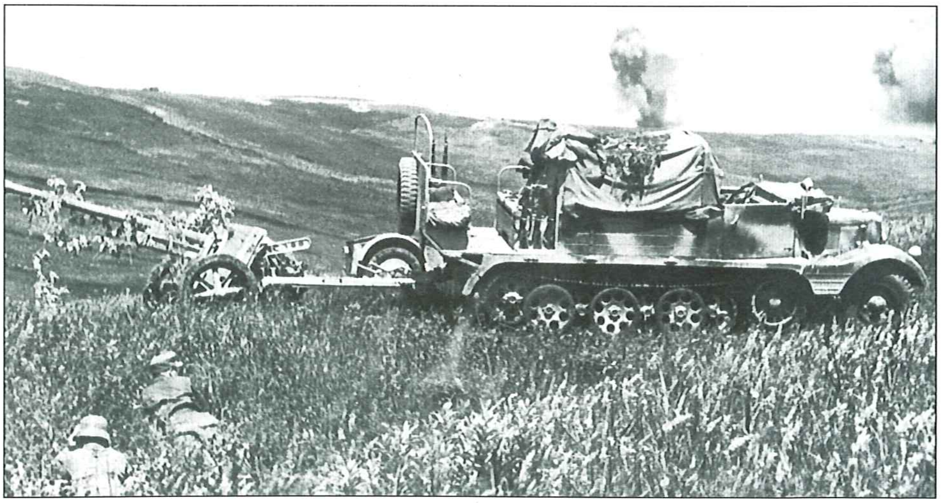
Half-tracks couldn't help in every situation and being continually called upon to assist pulling vehicles and equipment out of the mud was only one of the ways the German Panzertruppe was involved in the war on the Eastern Front. It took up a lot of time, fuel and energy but usually ended in success. Not this time however, as we see the soldiers unhooking an 8.8cm FlaK 36 from an Sd.Kfz.8 that has just dug itself deeper into a ditch while struggling to pull its load out. Note the white road width markings on the rear of the half-track and the unit emblem in a shield outlined in white. This photo was taken in February 1943.



The Sd.Kfz.11 was a light 3-ton prime mover first employed for towing light howitzers but also used to tow 7.5cm and 8.8cm anti-tank guns. The final production version of this half-track began in 1939 and also provided the basic chassis for the Sd.Kfz.251. There were fewer of these half-tracks produced than either the 1-ton Sd.Kfz.10 or 8-ton Sd.Kfz.7. This Sd.Kfz.11 is towing an unidentified car across a river in the foothills of the Caucasus Mountains in September 1942. Note the unit emblem painted on the mudguards and the marking stenciled on the door.

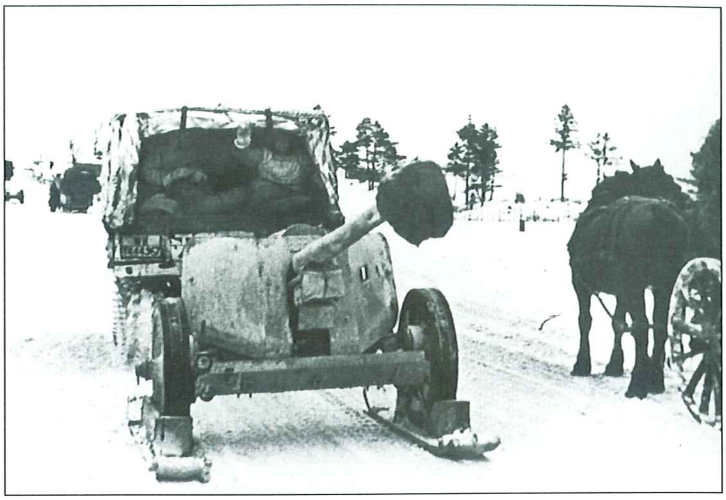


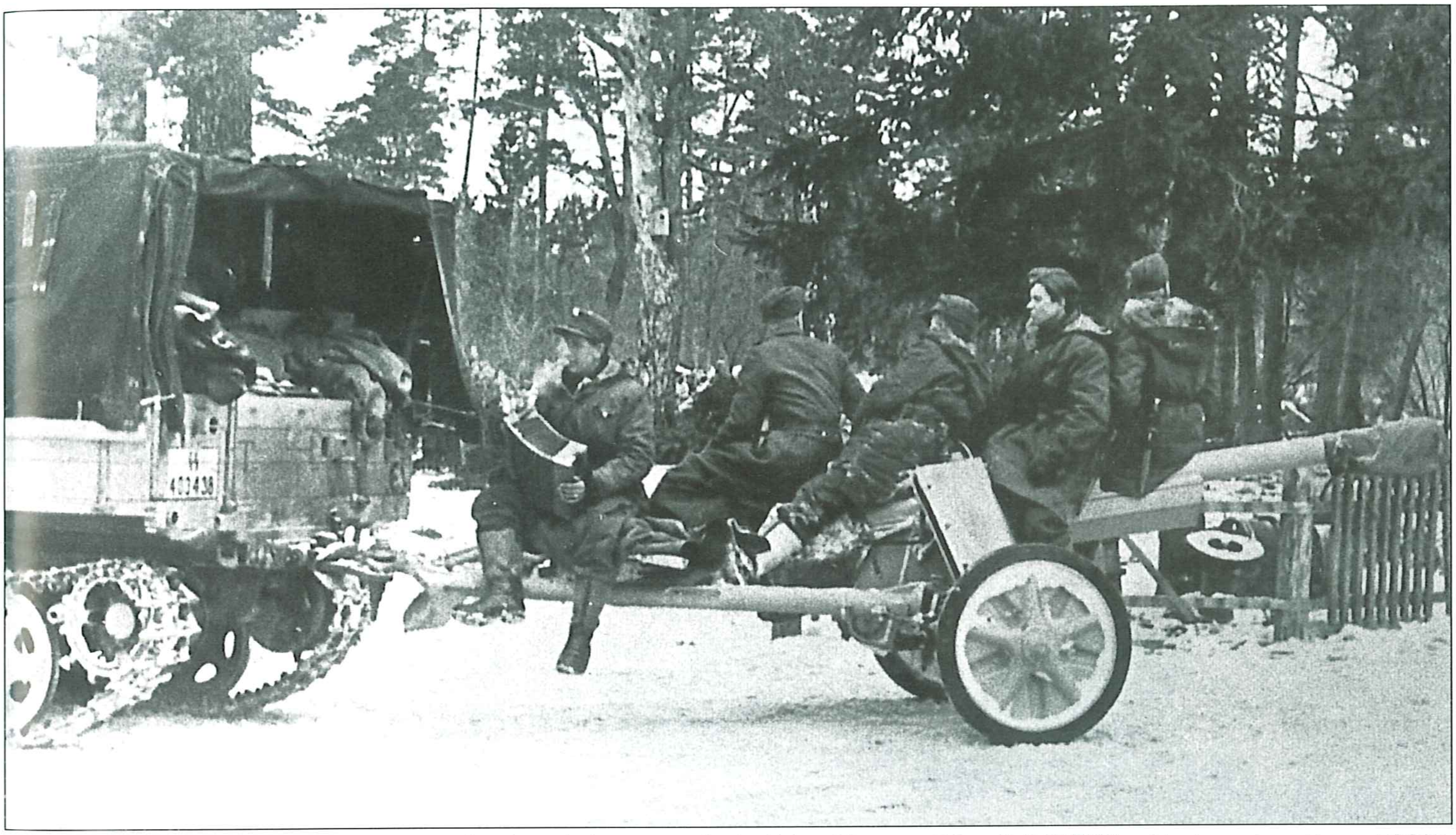
An Sd.Kfz.11 towing a 7.5cm PaK 40 anti-tank gun while crossing a river in the winter of 1943/44. The vehicle is painted in the new factory scheme of sand yellow and marked with a load label stenciled on the door with vehicle specifications for rail transport. Note the MG42 resting on the canvas top. Although unusual for a crew such as this to have one, it was probably issued as an anti-aircraft defense weapon.



A late production Sd.Kfz.11 with open combat compartment for the gun crew and wooden ammo storage rack, in this case for a 7.5cm PaK 40 anti-tank gun. Of special interest is the lengthened superstructure which made more room for ammo storage between the cab and crew seats. A similar modification was introduced during the same period on all other prime movers utilized as artillery tractors. The photo was taken in the southern sector of the Eastern Front during the summer of 1944 and shows the vehicle has been painted in a two color camouflage scheme, probably brown over the sand background.

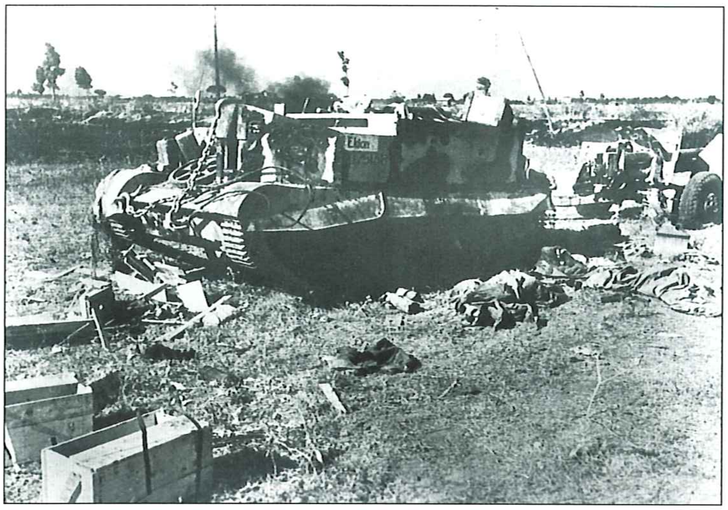
The RSO/01 fully tracked tractor was employed mainly by anti-tank units due to the light weight (3,700 kg.) and small cargo capacity (1,500 kg.). The production of RSO started at the end of 1942, quickly increasing through to the end of the war, and so was produced in larger numbers than many half-track prime movers. Here, one of them is utilized by a 7.5cm PaK 40 anti-tank unit of a Wehrmacht division. The vehicle, including the canvas top and the PaK 40, have been camouflaged with white paint. Note the skis improvised on the wheels of the gun.



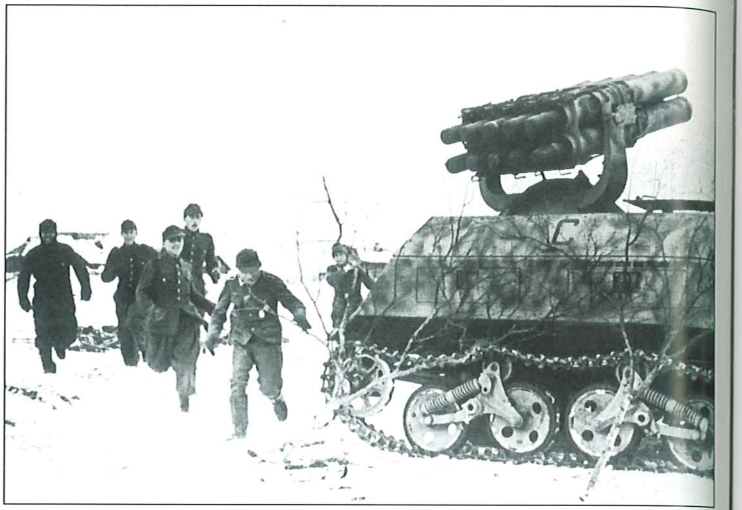


An anti-tank team from an SS division travelling through the western Soviet Union riding on a 7.5cm PaK 97/38(f) anti-tank gun towed by an RSO/01 fully tracked tractor. Both the vehicle and the gun are painted with overall sand without any camouflage pattern, which usually indicated they were rushed to the front from the factory and placed into service immediately. Note that four of the gun crew are wearing the first type of SS winter uniform, the fur lined anorak, a pullover which featured an oversize hood designed to be worn over the helmet. The weather must be mild as the soldier sitting on the left is playing an accordion.

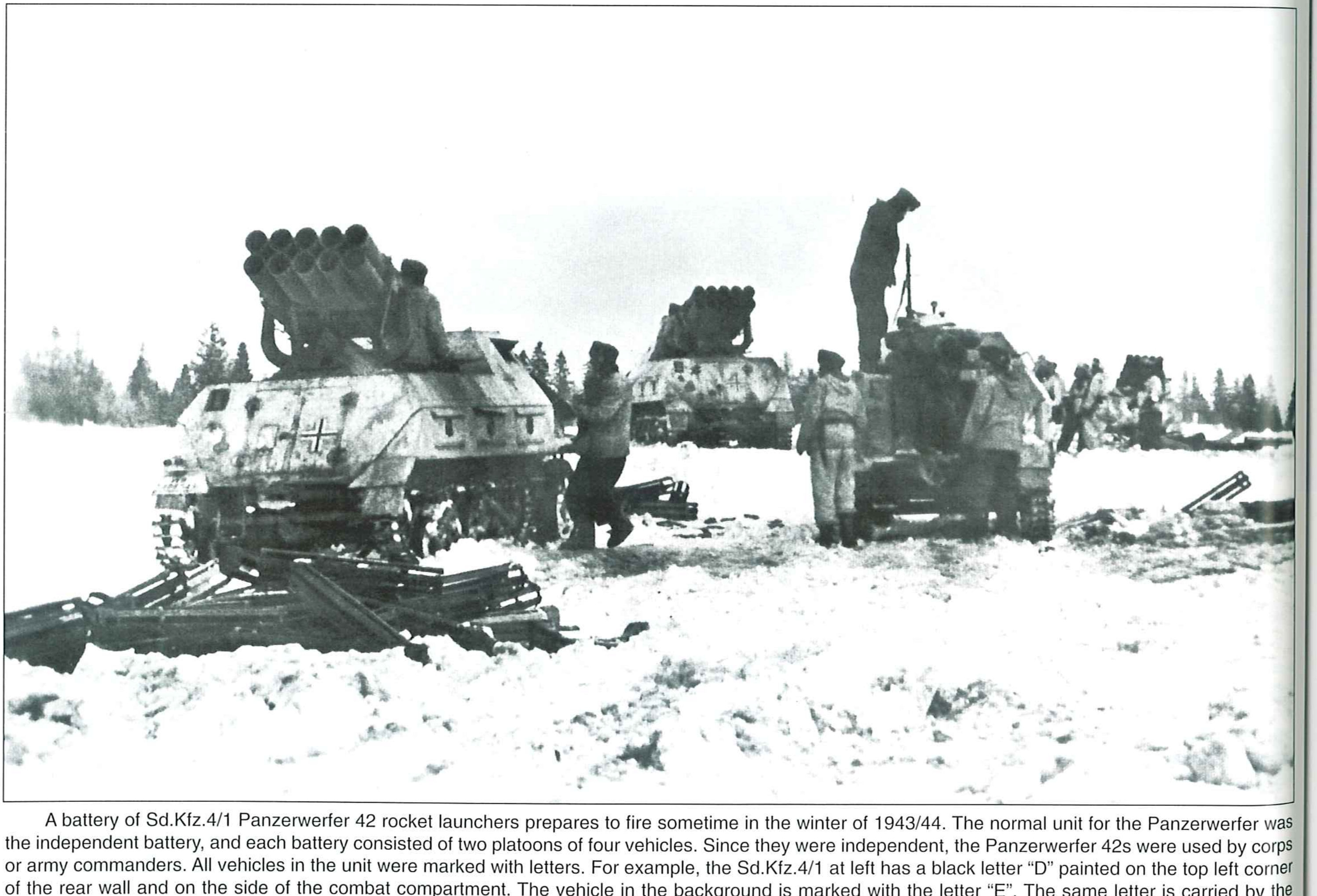
The war on the Eastern Front produced many changes in the Panzerwaffe. At the beginning of the war, their major support vehicles were wheeled trucks but by the end of the conflict they were supported by many different types of half and fully tracked vehicles. One example is the RSO, which was designed and built especially for the Eastern Front, hence its name - Raupenschlepper Ost (tracked tractor east). Seen here are a couple of RSO from an SS division involved in the battle for Kovel in May 1944.



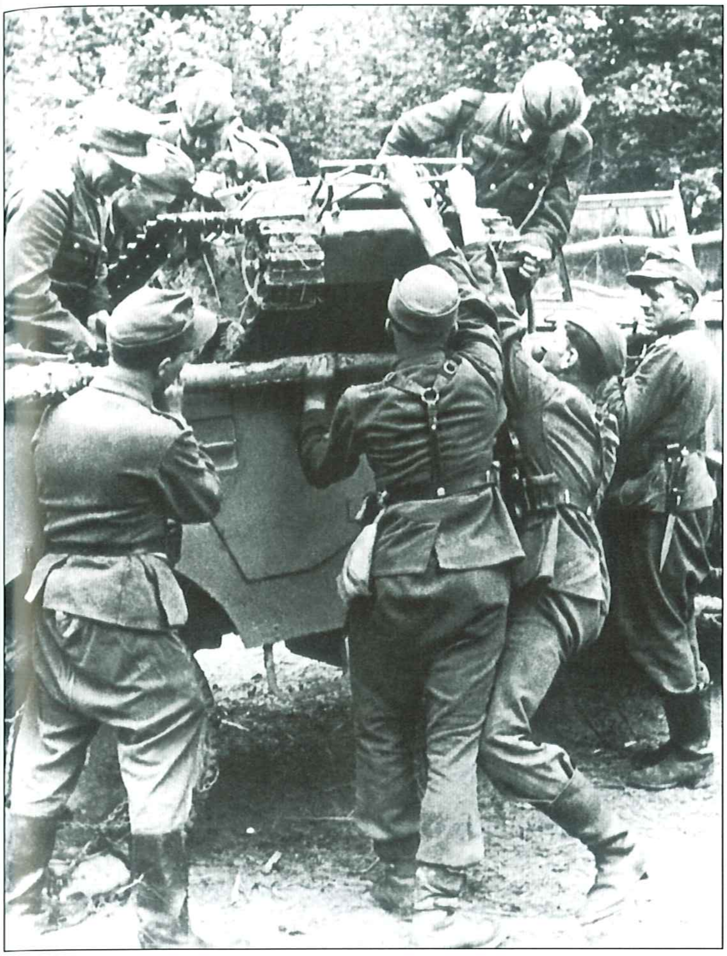
The Germans also used British Bren Carriers, fully tracked light prime movers, mostly in the Soviet Union where they captured many of them. They also used them in North Africa and Italy, where this one was abandoned by British forces during the battle for Sicily in July 1943, still hooked up to the 6 pdr. anti-tank gun it was towing. It has an unusual camouflage pattern and carries the name "Eldon" painted on a light color band above the serial no. 175138.

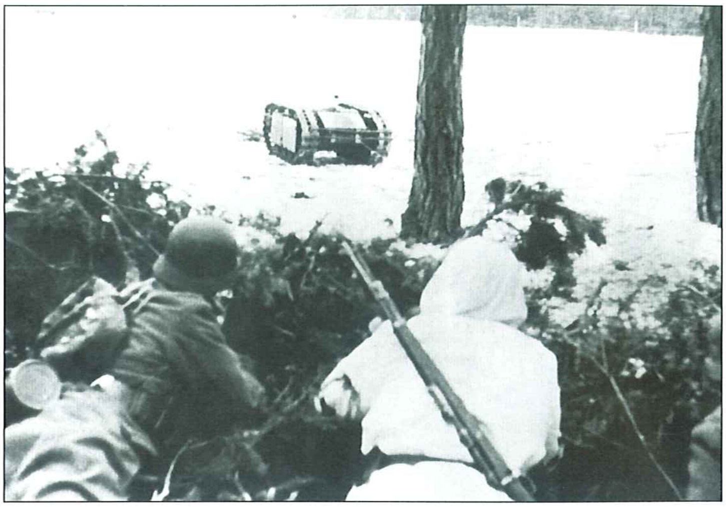


On the Eastern Front during the winter of 1943/44, the most useful weapons were self propelled on either fully tracked or half-tracked chassis. One of the more successful weapons was the 15cm Panzerwerfer 42 auf. Sf. (Sd.Kfz.4/1), a multi-barreled rocket launcher mounted on an armored "Maultier" chassis. Here we see the crew running to their vehicle. The launchers have been loaded and aimed in the direction of the enemy. The vehicle is painted in overall sand and camouflaged with a green and brown pattern. The letter "C" on the side of the hull indicates the vehicle position in the battery.



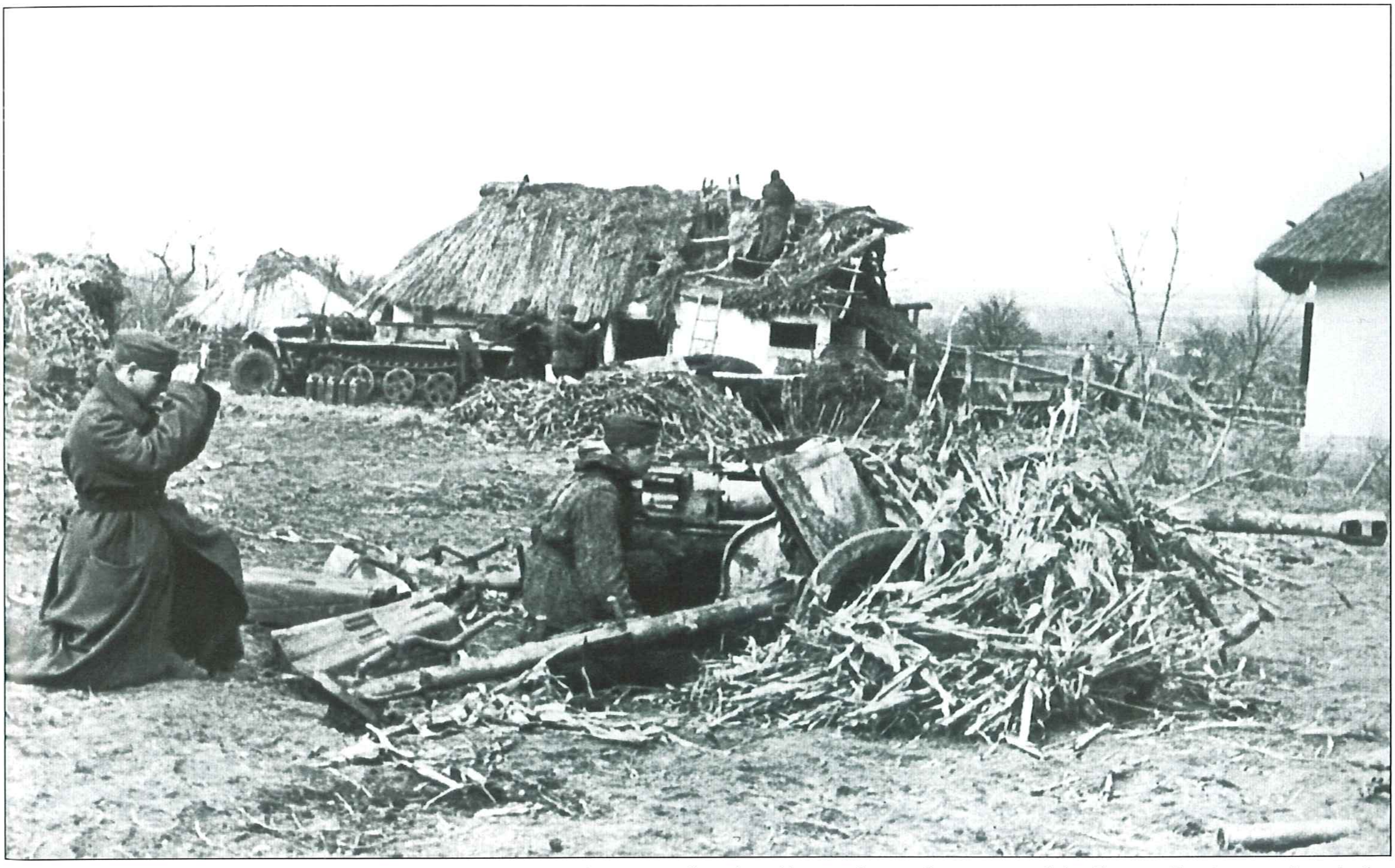
A battery of Sd.Kfz.4/1 Panzerwerfer 42 rocket launchers prepares to fire sometime in the winter of 1943/44. The normal unit for the Panzerwerfer was the independent battery, and each battery consisted of two platoons of four vehicles. Since they were independent, the Panzerwerfer 42s were used by corps or army commanders. All vehicles in the unit were marked with letters. For example, the Sd.Kfz.4/1 at left has a black letter "D" painted on the top left corner of the rear wall and on the side of the combat compartment. The vehicle in the background is marked with the letter "E". The same letter is carried by the ammunition carrier, the munitionskraftwagen (Sd.Kfz.4), visible at right without the Nebelwerfer 42. This half-track is armed with an MG34 for anti-aircraft duties.



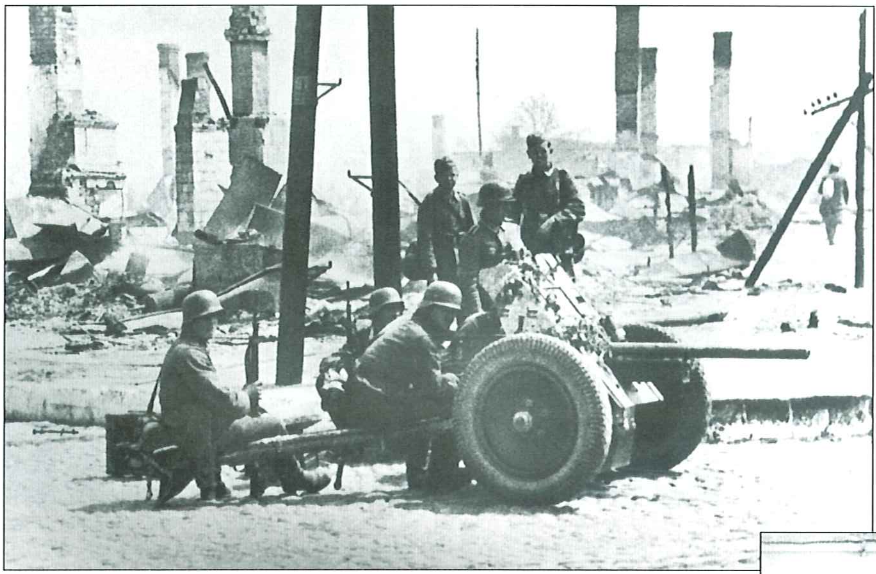


This is the first model of "Goliath" produced, the electric drive Sd.Kfz.302. Here it is being maneuvered toward an armored target - an SU-85. It carried a 60 kg. explosive charge that could cause severe damage to an armored vehicle but it was highly vulnerable to ground fire and was not as effective a weapon as the later Sd.Kfz.303. This is a propaganda photo that was taken in the winter of 1943/44.

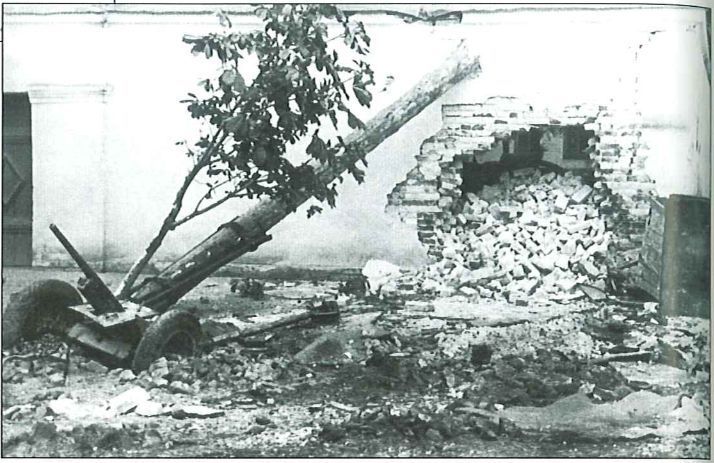
The le.ladungsträger (Sd.Kfz.303) "Goliath" was a remote control, wire guided demolition vehicle carrying a 75 or 100 kg. explosive charge, that was designed in 1942 to assault buildings and fortifications, though it was also used against armored vehicles. These soldiers are struggling to unload this "Goliath" from a Steyr 1500A, not an easy task as the unit weighed up to 420 kg. depending on the charge. Normally, the vehicle was moved around on a small man handled two wheel trailer, but in practice, the situation often called for whatever means was necessary.



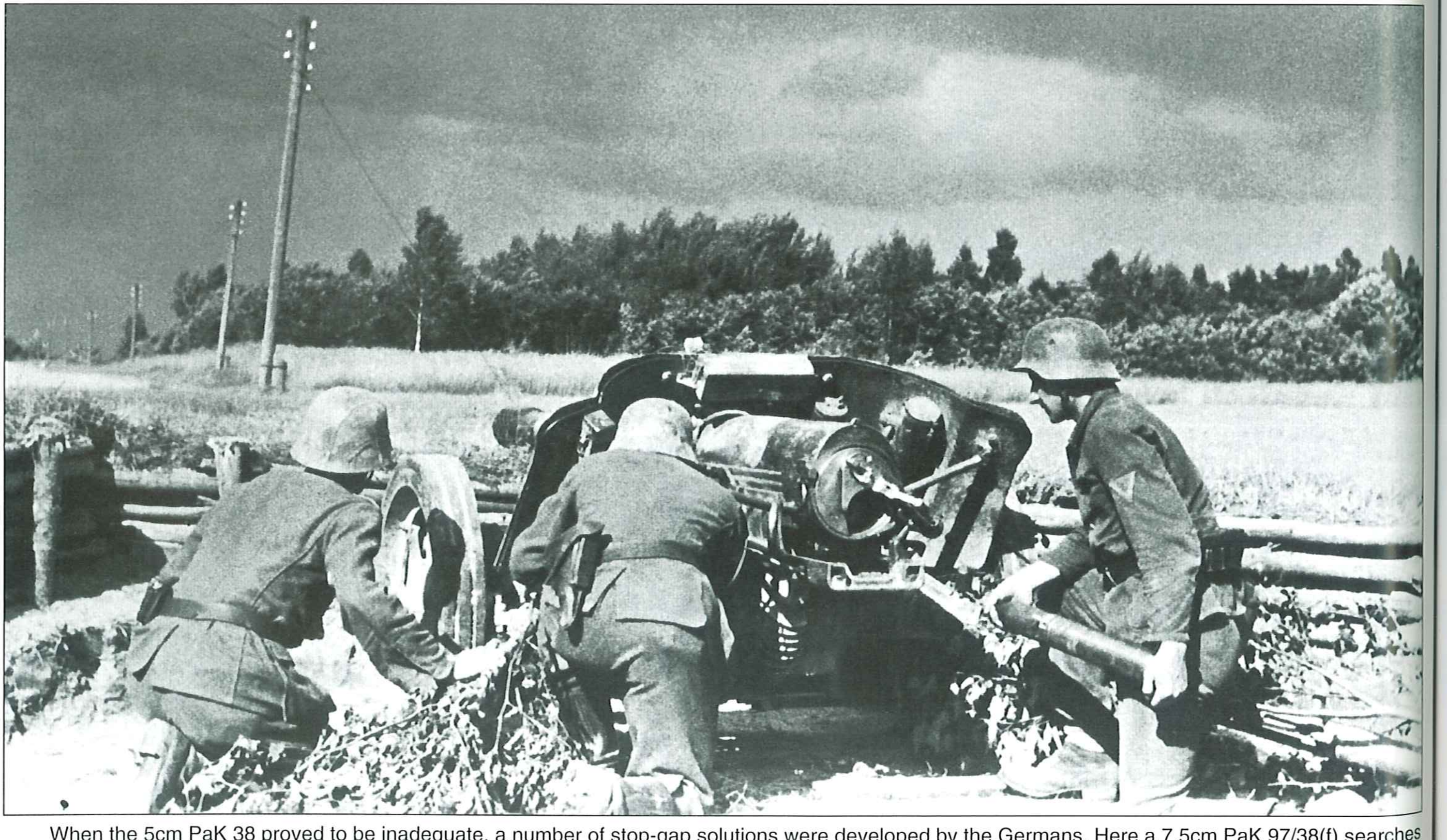
A 5cm PaK 38 anti-tank gun manned by SS troops waiting in a camouflaged position on the southern sector of the Eastern Front, somewhere in the Ukraine. In the background is an Sd.Kfz.10 with another Pak 38 behind it. The photo was taken in the late spring of 1944, however, the half-track and guns still show signs of their white winter camouflage paint. Note the observer on the roof of the farmhouse beside the Demag.



The 3.7cm PaK 36 was the main German anti-tank gun at the beginning of the war and was used on all fronts. By 1941, Germany had produced over 15,000 and many others were built under license in other countries including the Soviet Union. This gun was photographed in the Soviet Union in the summer of 1941. The muzzle velocity of its armor piercing round was 762 m/s and it could penetrate about 38mm of armor plate at ranges up to 400 yards. As such, it was unable to penetrate most French tanks.



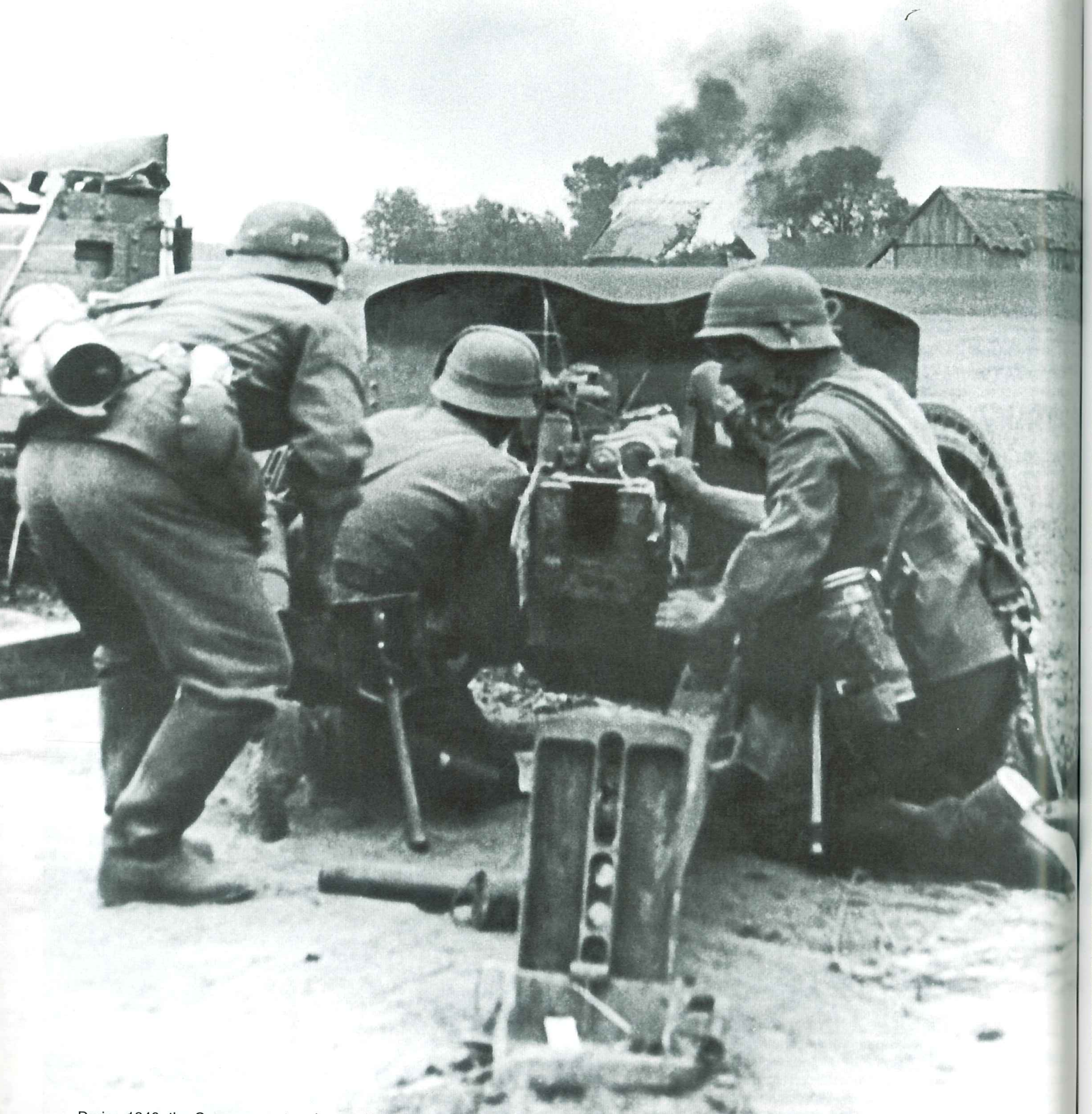
The lack of power of the PaK 36 is evident in this photo taken in September 1941. The gun, together with a telegraph pole and a small tree, was crushed into the ground by a Soviet tank that carried on through the building wall in the background before being stopped. Modern Soviet tanks such as the T-34 and KV series had thicker armor which could not be penetrated by the PaK 36 rounds. However, in 1941, the tungsten cored AP40 round was introduced which was able to penetrate the armor of the T-34 up to ranges of 100 yards.



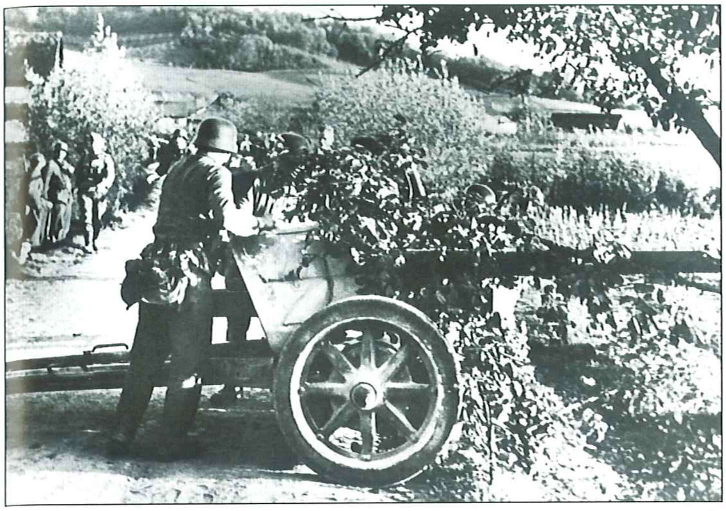
When the 5cm PaK 38 proved to be inadequate, a number of stop-gap solutions were developed by the Germans. Here a 7.5cm PaK 97/38(f) searches for targets in the late summer of 1943. This gun was manufactured using the barrels of captured French model 1897 field guns attached to the carriage of the 5cm PaK. A mere expedient, the gun was neither popular nor successful due to its low muzzle velocity of 570 m/s. This picture gives a good impression of the low silhouette of the PaK 38 carriage.

Hard at work! A 7.5cm PaK 97/38(f) anti-tank gun photographed in full recoil while firing at a target in the Soviet Union in the late summer of 1941. The gun was employed in Panzerjäger Abteilungs organized into three companies of twelve guns each. There are also known instances when they were used as light infantry guns in motorized infantry regiments.

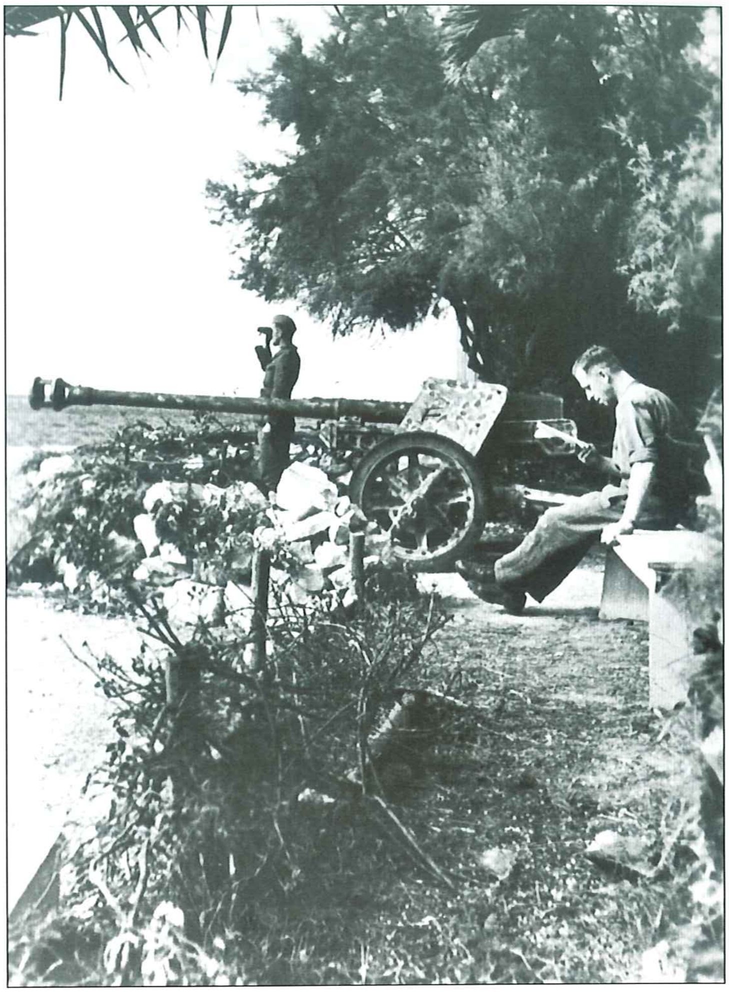
Perfectly camouflaged in the white monotony of the winter of 1943/44, this 7.5cm PaK 97/38(f) waits for the enemy. Anti-tank guns, which were difficult to spot when in position, represented a continual danger for any tank. However, when the first shot was fired, their attention turned to the gun and its crew. Rounds of HE (high explosive) could easily destroy the position.



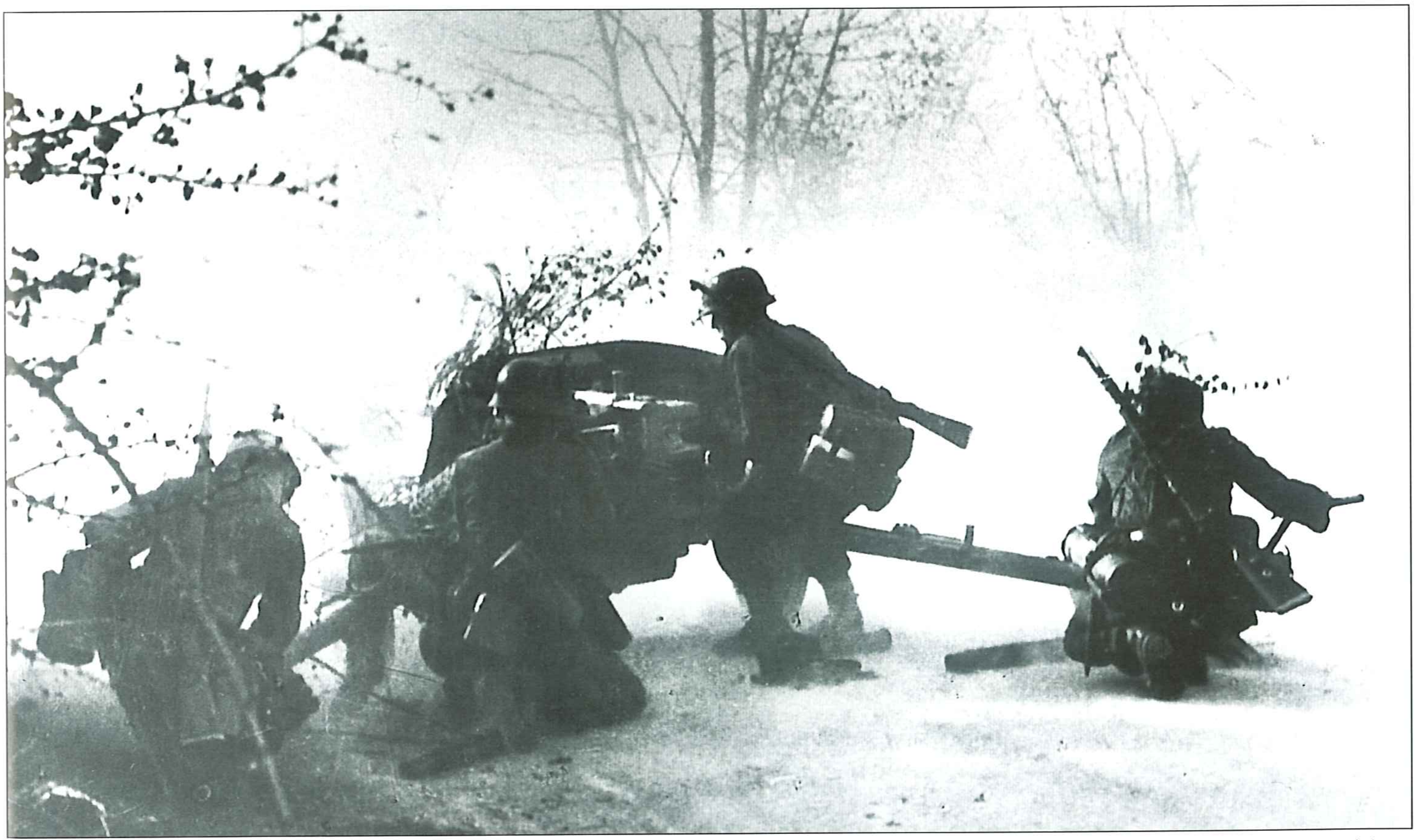
During 1940, the Germans captured many French 47mm SA37 APX and the almost identical SA39 APX anti-tank guns. Re-designated as the 4.7cm PaK 181(f) and 183(f), they were used by units in Occupied France well into 1944. Here, one is being used against Partisans in the Soviet Union.



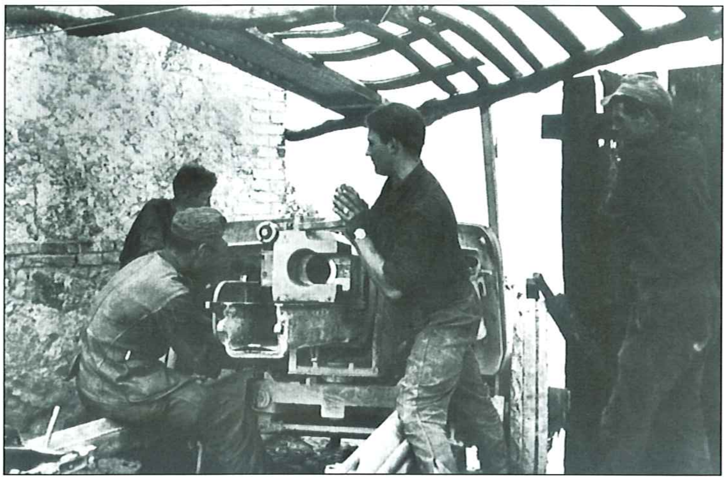
A profile shot of a 7.5cm PaK 40 in the Soviet Union in 1942. The bolt heads on the outside of the gunshield had holes, through which wire could be strung to attach foliage as camouflage. The gun could be fired with the foliage attached and even moved to a new position if needed. If there was any wind on the battlefield, it was difficult to spot these camouflaged guns as the wind dissipated the smoke.



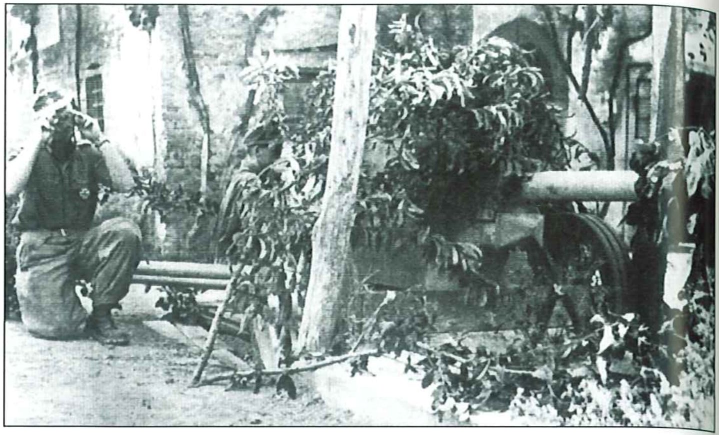
Another profile shot of a PaK 40 gun, this time taken in the Balkans and camouflaged, not with foliage, but a standard camouflage paint scheme of green and brown over the sand base. The gun is guarding a beach on the Adriatic Sea, a duty not suited for it due to its low penetration ability at long ranges.



A Pak 40 in action in Italy, spring 1944. The crew appears to have had no time to prepare their position before entering into the battle, as two of them are holding the ends of the gun trails down to prevent the gun from moving when fired. Note the foliage attached to the end of the barrel completely covering the muzzle brake. The smoke of battle has almost obscured the battlefield.

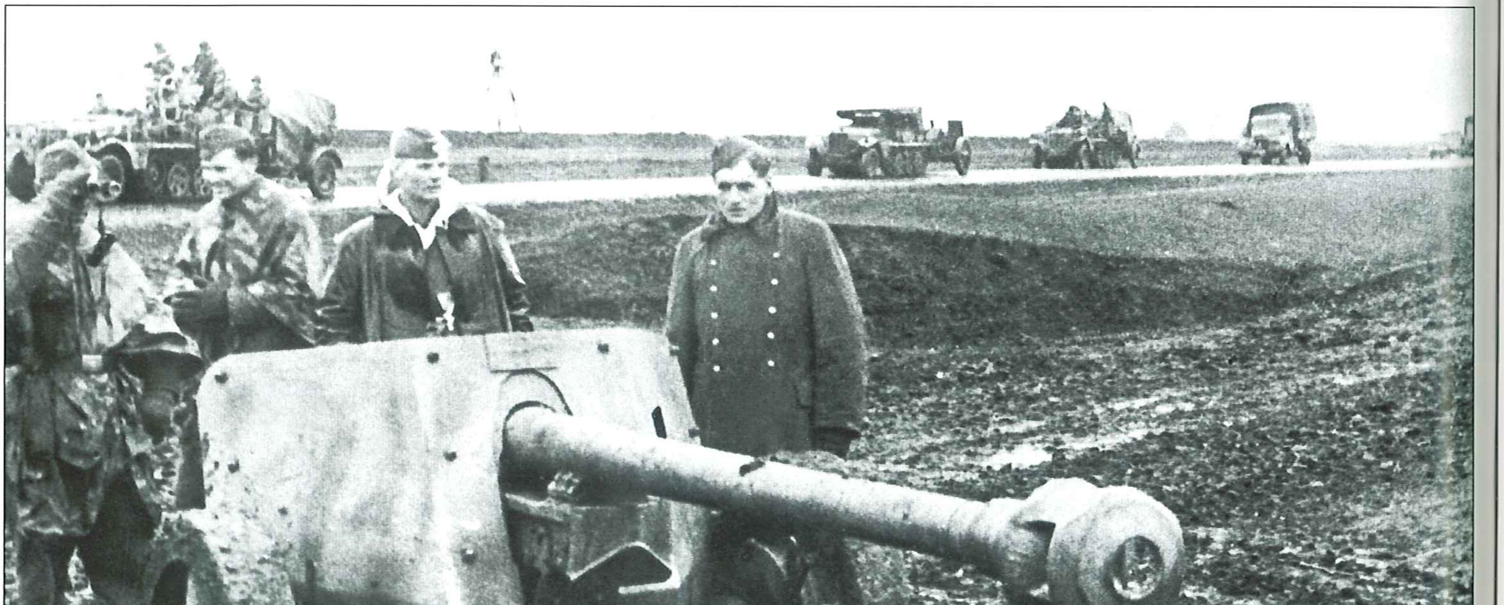


A crew member closes the gun breech of a PaK 40 after loading a round, Italy 1944. The PaK 40 gave the Germans complete superiority over any allied tank used in Europe because of their weak armor protection. On the other hand, the allies had complete air superiority, so the successes of the Panzerjäger Abt. were limited in time in any combat. Note the details of the gun and the worn rubber tires.

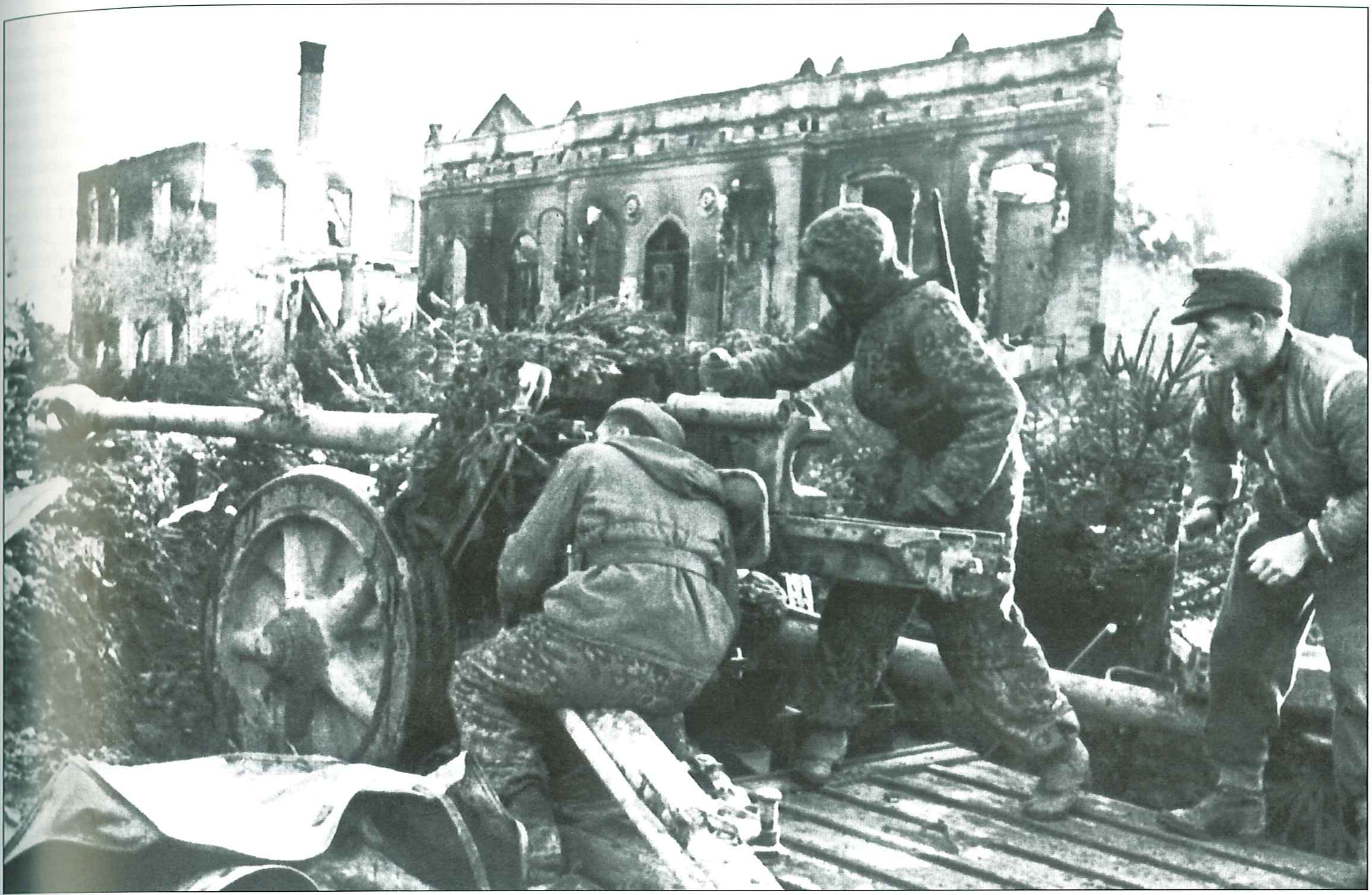


The 7.5cm PaK 40 was the mainstay of German anti-tank defense. Seen here blocking a road in a French city at the end of July 1944, a 7.5cm PaK 40 is almost completely hidden under foliage. Anti-tank gun positions like this were effective tank traps, but when they fired their first shot and their position was spotted, they quickly attracted enemy return fire.

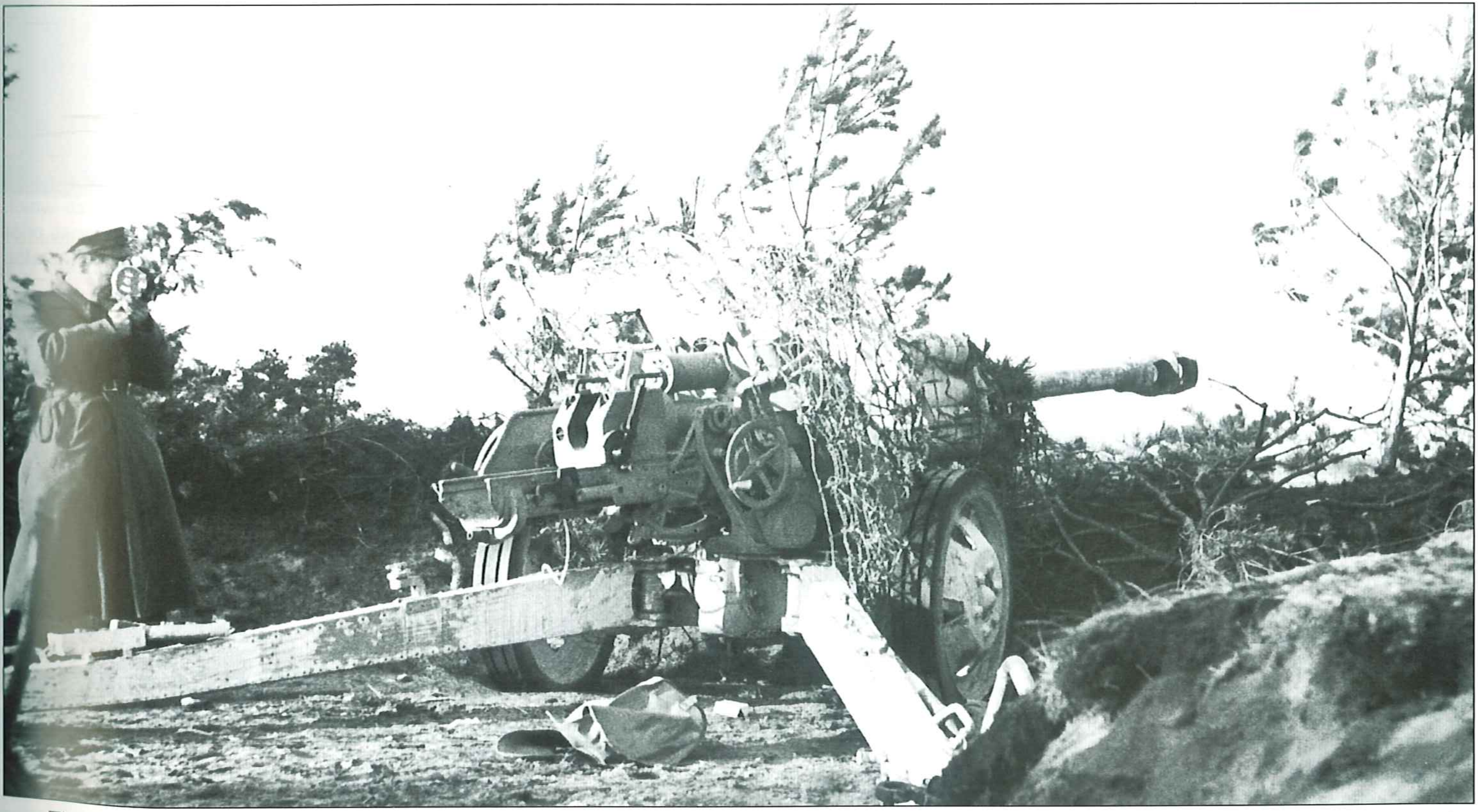
Two crew members of one of the 7.5cm PaK 40 guns in the background who died at their post when their gun position was knocked out by Soviet tanks during the Battle of Berlin in April 1945. The PaK 40 was still capable of dealing with most Soviet armor due to the high quality of German ammunition and the low quality of armor plate used in the Soviet tanks.



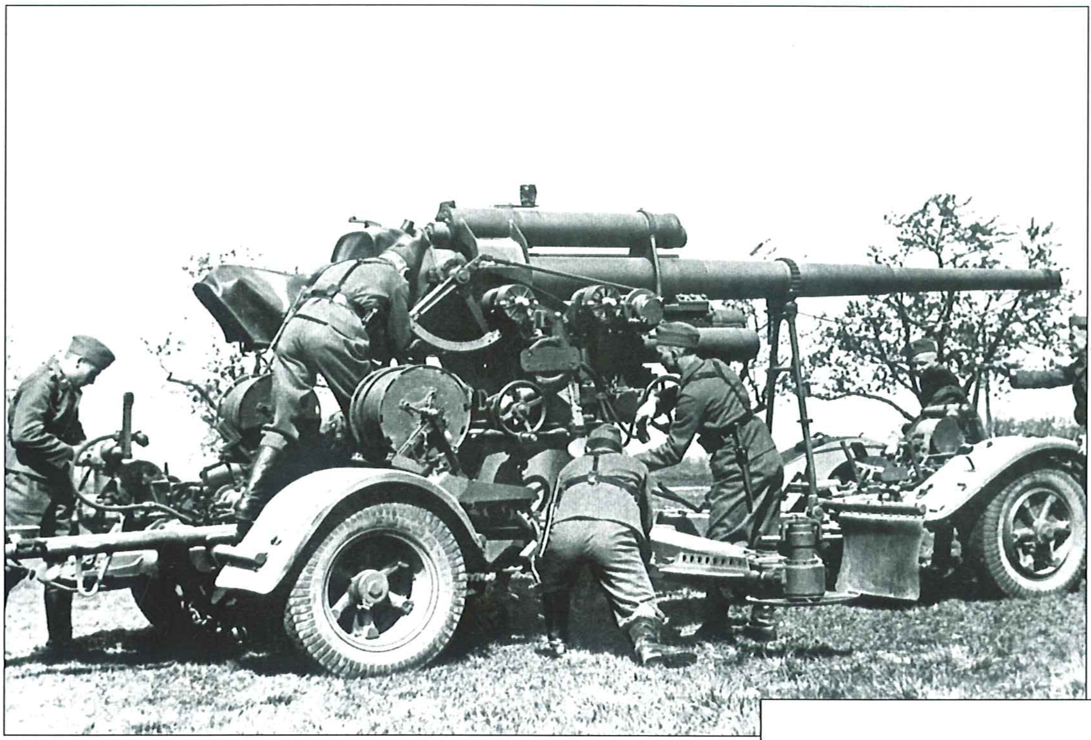
This 7.5cm PaK 40 anti-tank gun was positioned in a battle station to cover a road. Moving along the road in the background are Sd.Kfz.10 light tractors. The first of them is armed with a 2cm Flak 38 anti-aircraft gun and the next two are towing 15cm sIG 33 guns. The two men on the left are wearing the zeltbahn shelter quarter over their uniforms.



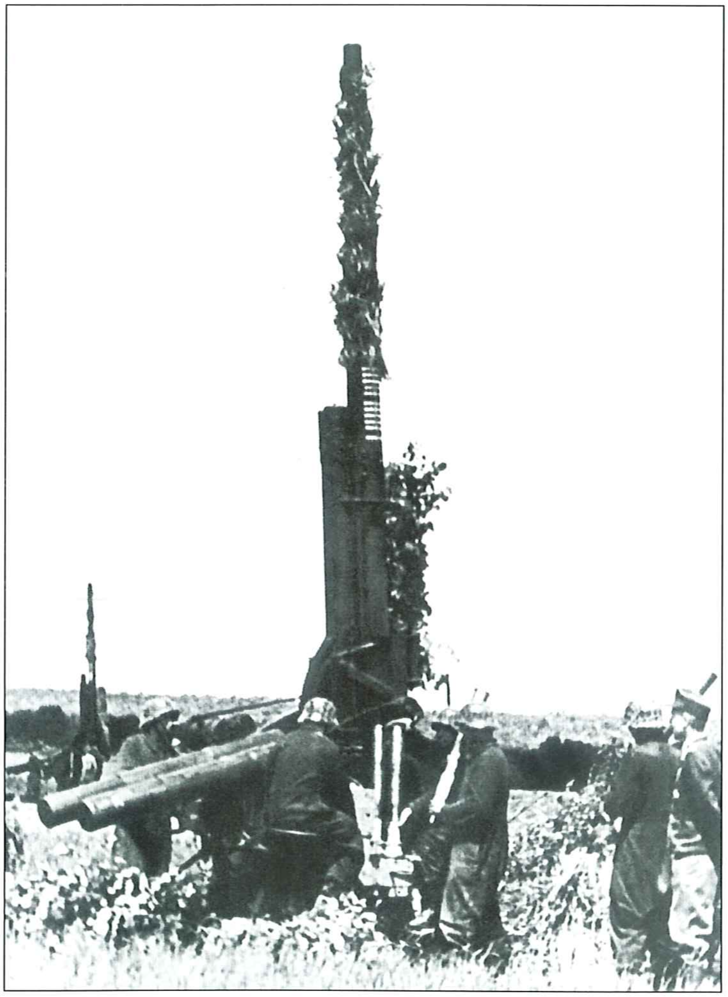
The final large scale operation in which the SS took part prior to the end of the war was in Hungary in January 1945. A few sub-units were used to support Eichmann's extermination operations against the Jews. Here a PaK 40 gun from one of the SS divisions is put to use in the battle for Budapest in early 1945.



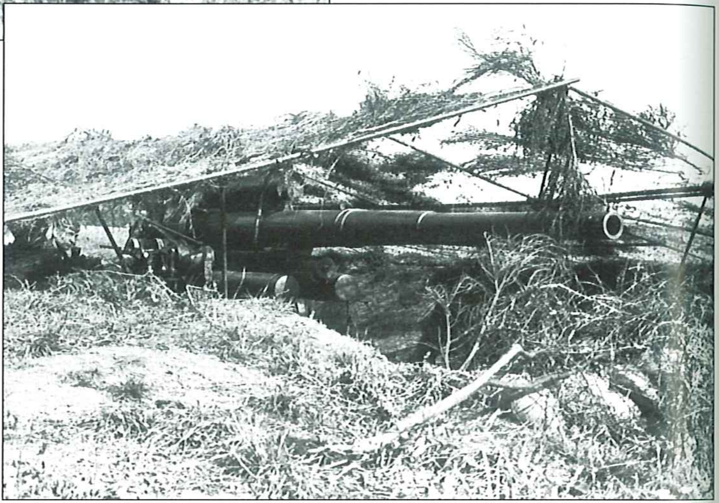
The Germans very often used captured Soviet guns. This one is a 76.2mm Model 1939 division gun, developed and used as a dual purpose gun by the Soviets and designated 7.62cm FK 297(r) or 7.62cm PaK 39(r) in German service. It was used by the Germans the same way as the Soviets used it even though it was not as effective as the 7.5cm PaK 40. The high shield made this gun more difficult to conceal and provided less protection from machine gun bullets and shell splinters for the crew. The gun was repainted with overall sand and has a worn white winter camouflage paint coat.



The famous "88" was the mainstay of German anti-aircraft defense and was also employed as an anti-tank gun in the Panzer divisions as early as 1939. There were no targets - armored or otherwise - that were safe while in the range of these guns. The rounds of the FlaK 18 weighed around 10 kg. and were very powerful. The armor piercing Pz.Gr.39 could penetrate 84mm of armor plate at ranges up to 2,000 meters and were the only German guns that could deal with the Soviet KV tanks encountered in the summer of 1941. In this photo, the Luftwaffe crew of this 8.8cm FlaK 18 prepare to unlimber their gun in a training exercise in the late 1930s.



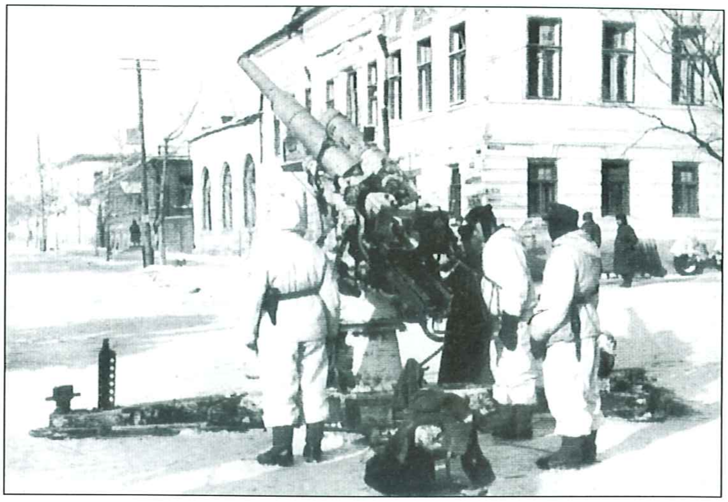
The "88" was only successful in engagements against aircraft flying at high altitudes, such as the Allied bomber formations encountered by the Germans in Italy and France between 1943 and 1945. Here we have an example of a Luftwaffe 8.8cm FlaK 18 battery, its guns at maximum elevation. Note the kill markings on the nearest gun. The two crewmen standing in the middle of the photograph are inserting the ends of the 8.8cm rounds into the fuse setter while the seated crewman to the left operates the setter.

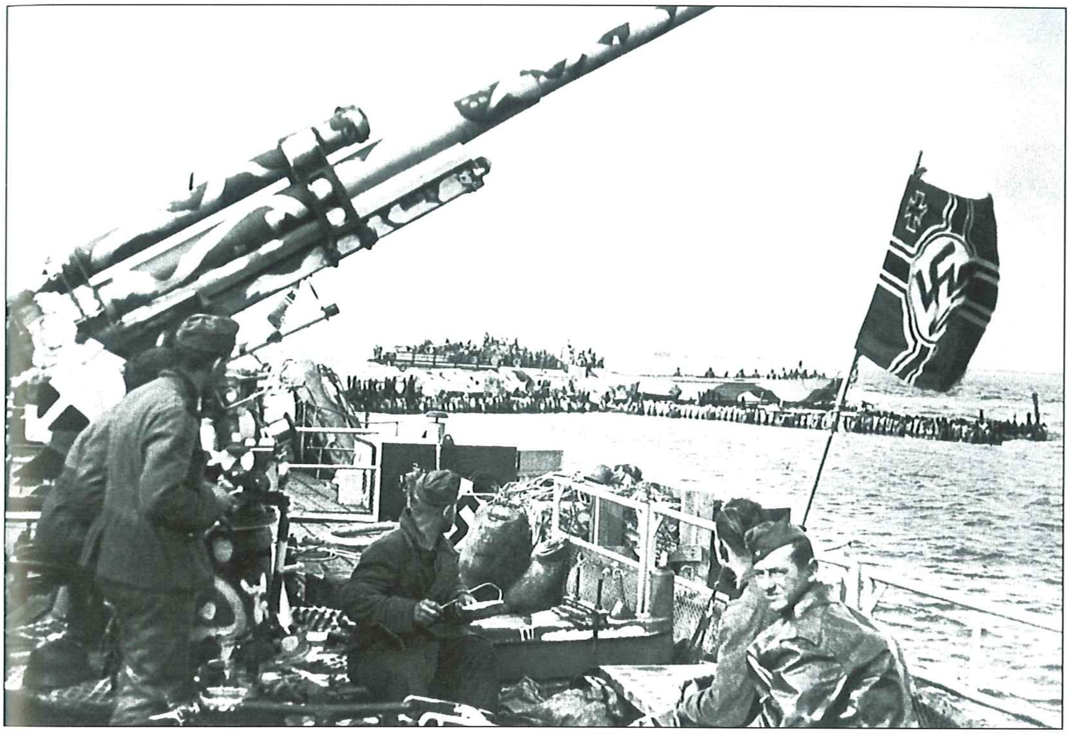


The business end of another Luftwaffe 8.8cm FlaK 18 protrudes out of an elaborately prepared camouflage position ready to engage armored targets. The photo was taken in the late 1930s during an exercise which illustrates that the Germans trained to utilize these guns against tanks prior to the beginning of the war and consequently, the idea that it was originated by General Erwin Rommel in France in 1940, is incorrect.

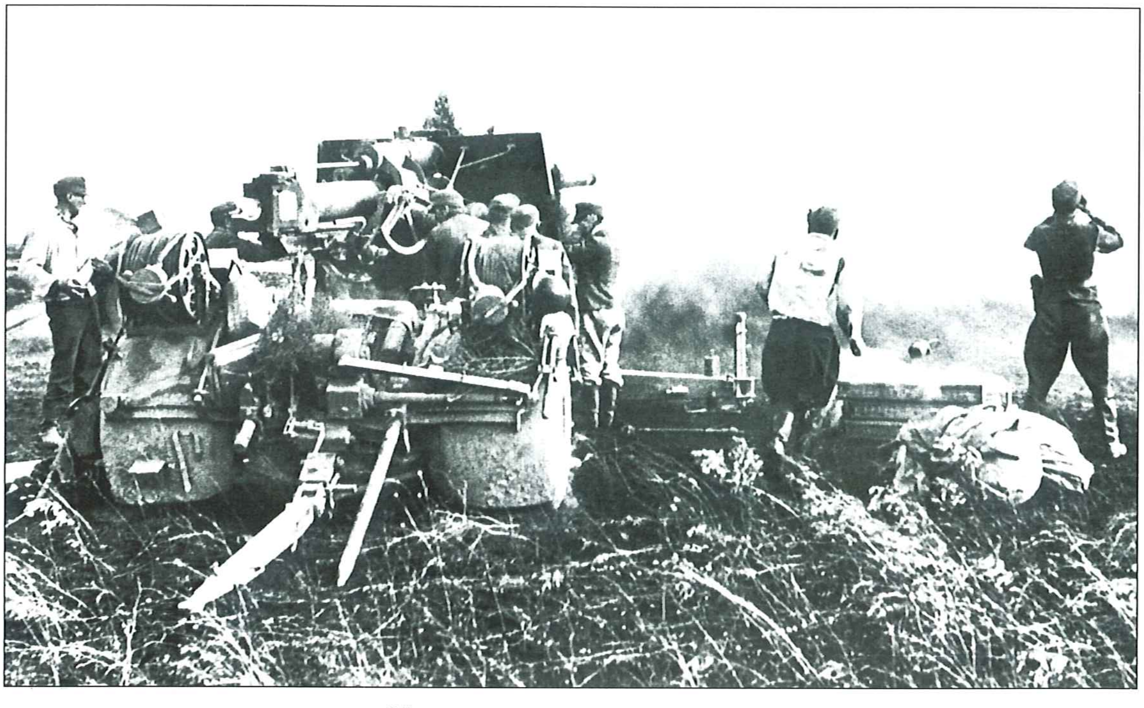
The crew of a Luftwaffe 8.8cm FlaK 18 training on firing procedures during a pre-war exercise. The well camouflaged gun has just ejected a spent shell casing from the breech. The divisional heavy flak artillery was rarely used to engage enemy aircraft, mainly because they usually operated at low altitudes which made the "88" ineffective.

A winter camouflaged 8.8cm FlaK 37 anti-aircraft gun set up in a Russian city in the Don Front, February 1942. The FlaK 36 and 37 differed from the Flak 18 mainly in the barrel and type of trailer, which is not seen here. The barrel had three removable liners that could be replaced in the field instead of having to replace the whole barrel. The new trailer had four sets of tandem wheels and was towed with the gun pointing to the rear. The barrels of the three guns were completely interchangeable and it was not unusual to see a FlaK 18 barrel on a FlaK 37 carriage.

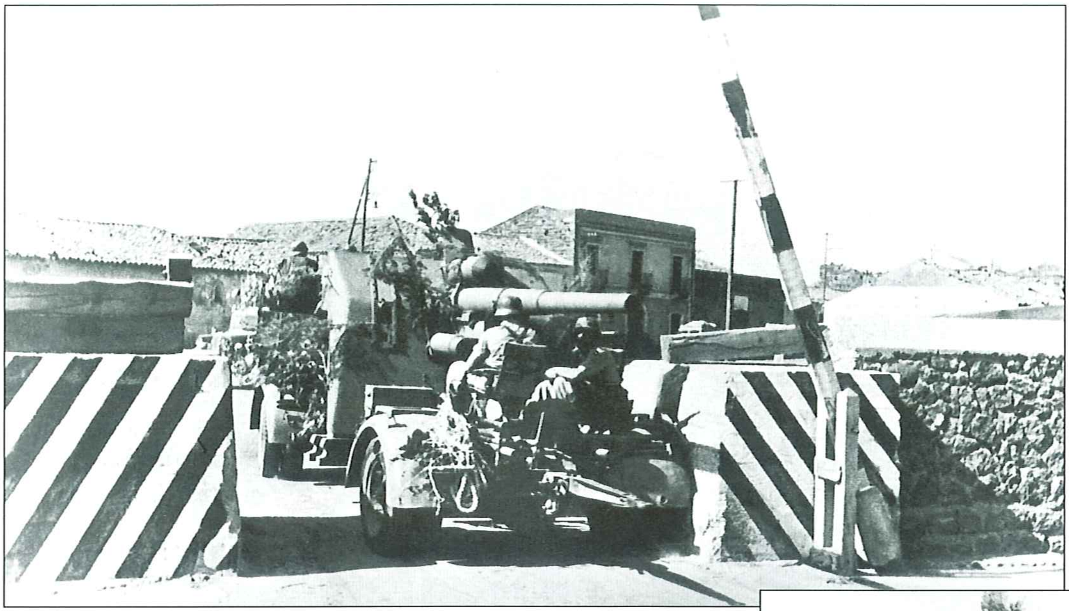




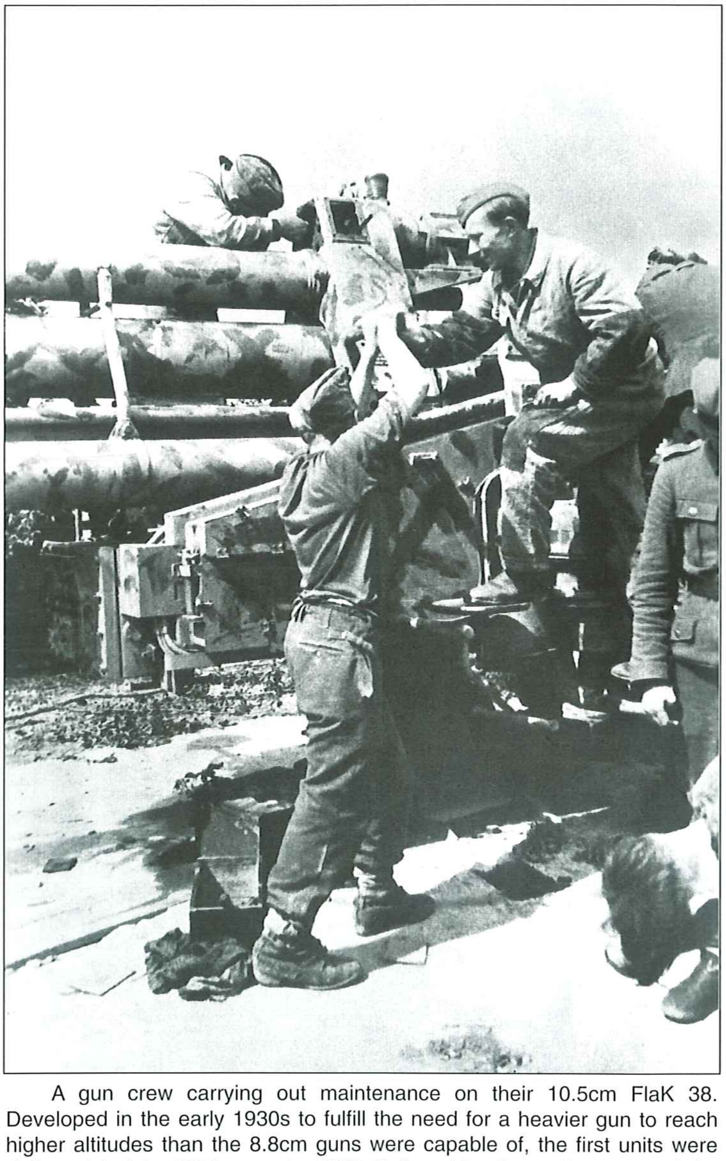
In 1941, the Germans captured many Russian anti-aircraft guns such as this 85mm model 1939. They were rebored for German ammunition and became the 8.5/8.8cm FlaK M.39(r). Here we have one of these guns mounted on a ferry boat in the Black Sea employed to protect shipping between Kerch (Crimea) and Kuban (Caucausus) against Soviet air raids in 1942/43. The gun has had a camouflage pattern of sand color that was probably applied directly over the Soviet green paint.



It looks like this 8.8cm FlaK 36 may have been photographed in North Africa, but it was employed during the battle for Stalingrad in October 1942. The flat landscape in North Africa and southern Russia was perfect for tank warfare, in which superiority was guaranteed to the side with the best weapons and ammunition. The carriage appears to be dark gray with sand camouflage, however the barrel, in full recoil, looks to be in overall sand, perhaps indicating it is a replacement.

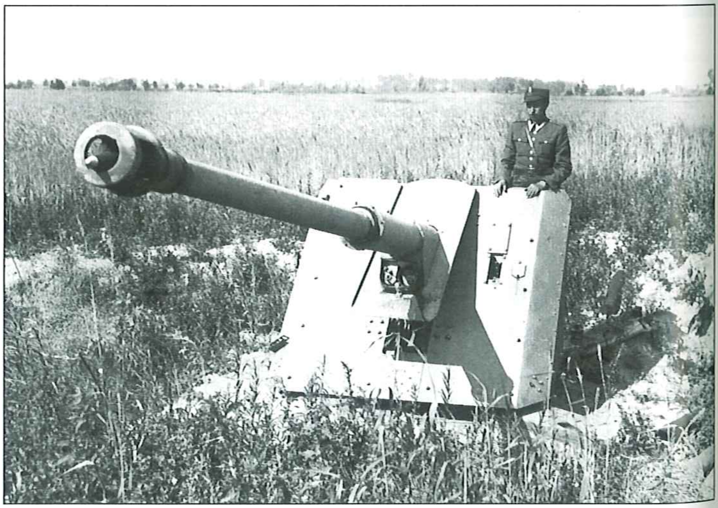


An 8.8cm FlaK 36 with a FlaK 18 barrel being towed into a town in Italy in 1943. Note the different type of gunshield that has been fitted. At the beginning of the war, most of the "88"s were organized into independent Luftwaffe anti-aircraft units, but since 1941, the number of these guns organized into the Panzer divisions had steadily increased.

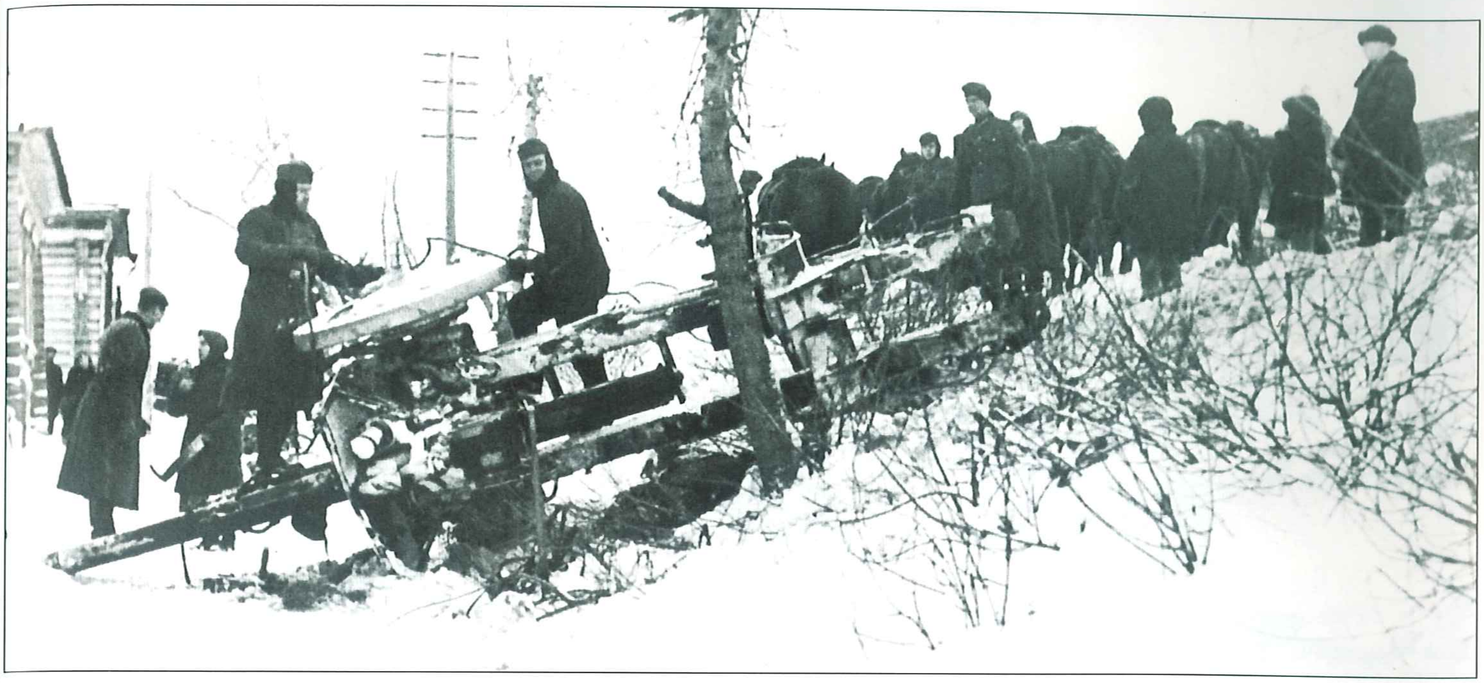


A gun crew carrying out maintenance on their 10.5cm FlaK 38. Developed in the early 1930s to fulfill the need for a heavier gun to reach higher altitudes than the 8.8cm guns were capable of, the first units were delivered in late 1936 or early 1937. Eclipsed by the performance of the 8.8cm FlaK 41, they remained in production because not enough FlaK 41s were being produced. This gun appears to be camouflaged with green or brown paint on the overall sand base.

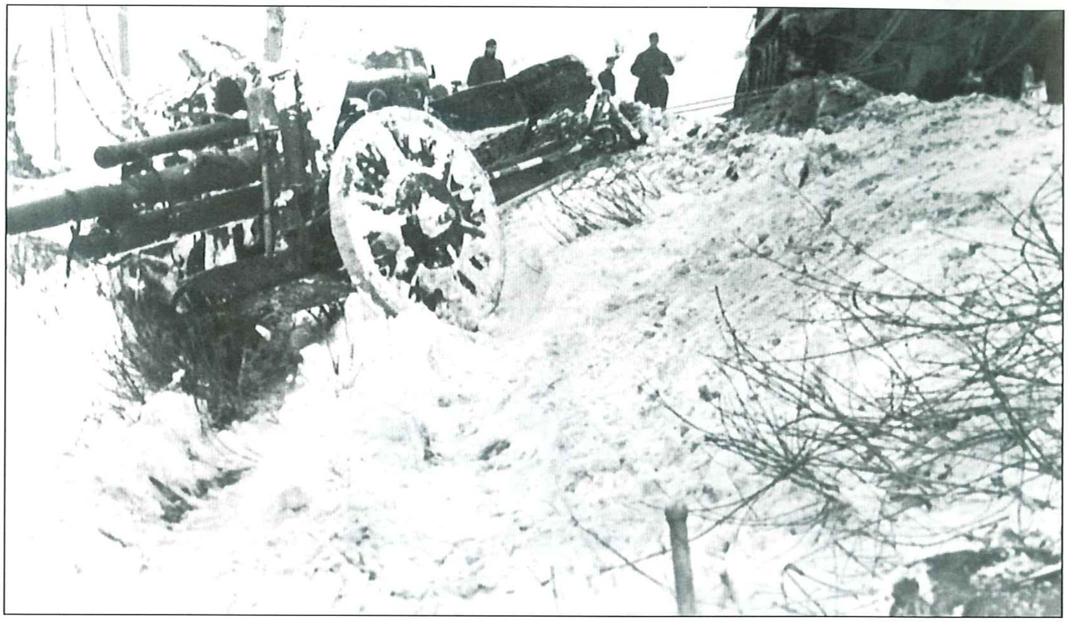
A rare shot from the last German offensive in Hungary in the Lake Balaton area, January 1945, showing an 8.8cm FlaK 37 parked along a roadside in the company of a prime mover and some staff cars while being passed by a Mercedes-Benz L3000S 3 ton truck. The gun has been completely covered with foliage for camouflage plus some fresh snow.

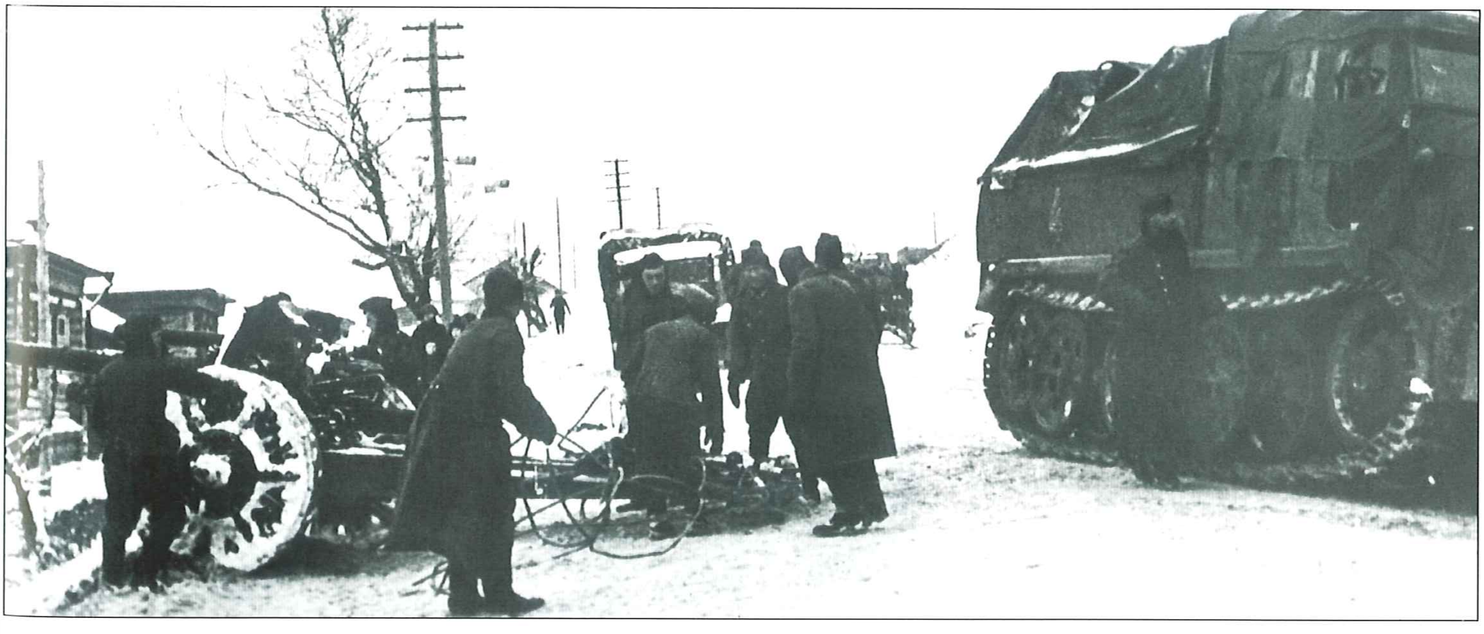


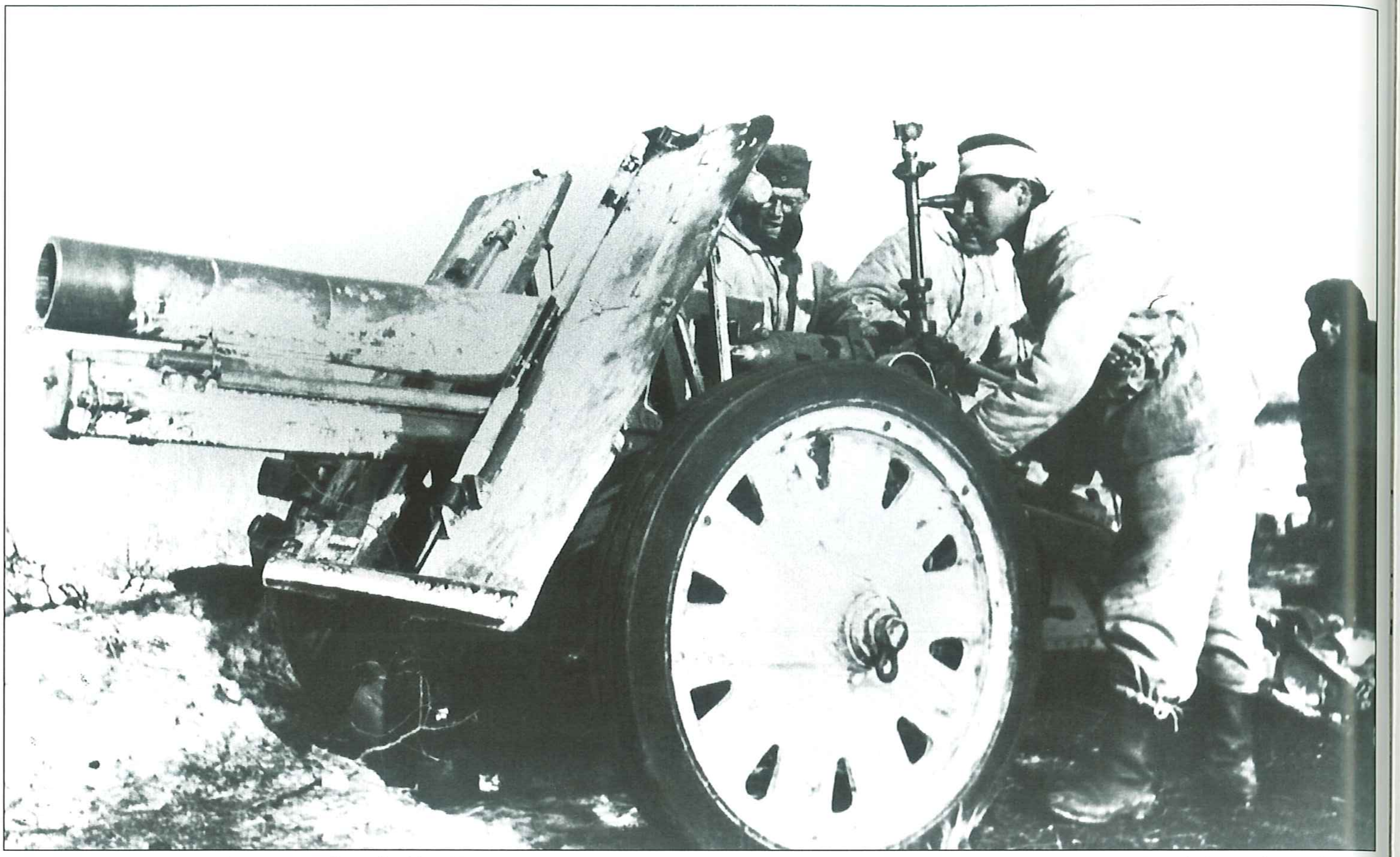
As carefully dug in as it is, this 8.8cm PaK 43.L/71 would be nearly impossible to detect from a distance. The PaK 43 was the finest anti-tank gun produced during WWII and was issued to frontline troops in time to deal with the new Soviet JS-2 tanks appearing on the Eastern Front in late 1943. It was transported on a cruciform carriage developed from the 8.8cm anti-aircraft guns and ran on four wheels. Air raids on the factories resulted in a lack of carriages and a slightly different version of the gun was mounted on the carriage of the 10.5cm leFH 18 with the wheels from the 15cm sFH 18 resulting in the towed version of the gun, the 8.8cm PaK 43/41.L/71.



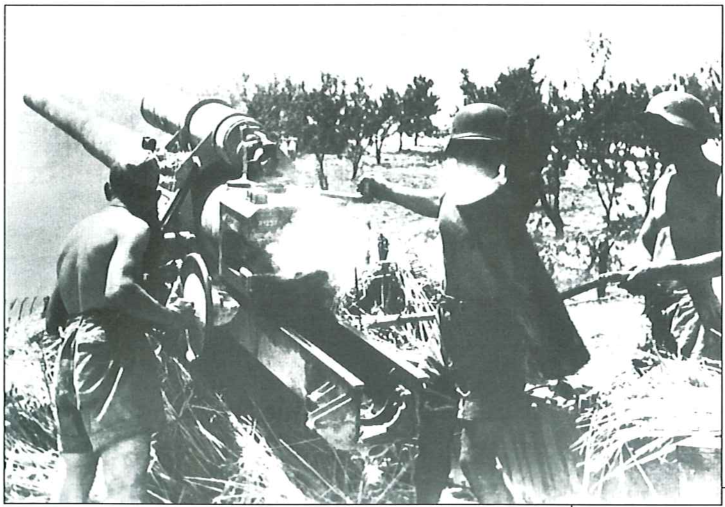
A sequence of photos showing an often repeated scene on the icy roads of the Soviet Union in the winter of 1941/42. This horsedrawn 10.5cm leFH 18 howitzer slid down the embankment and overturned requiring the help of an Sd.Kfz.9 to regain the road. In these trying conditions, the services of the prime movers were in constant demand.



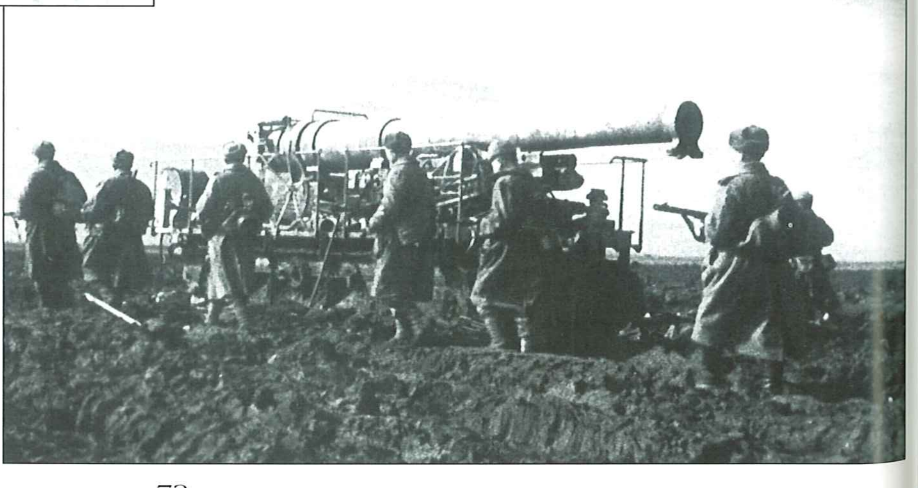




A 15cm sIG 33 howitzer camouflaged with white paint, winter 1942. It was considered a good infantry support gun, even though it was heavy by the standards of that time, and it remained in service until 1945. A number of these guns were mounted on a variety of self propelled chassis as well. It was utilized on the regimental level for direct fire support during attacks.



A 15cm sFH 18 ejects a shell casing from the breech just after firing a round in Italy, 1943. The serial number, R1233, stamped into the breech appears to have been filled in with white paint. The sFH 18 was the standard heavy howitzer of the Wehrmacht throughout the war and was also mounted on a self propelled chassis, called the "Hummel".



One of the few 19.4cm Kanone 485(f)GPF self propelled guns captured by the Germans in France in 1940 and later used on the Eastern Front to shell Leningrad by H.Gr.Nord. Here we see one of these guns abandoned west of Leningrad in soft, muddy ground during the great retreat in the winter/spring of 1944. The gun was an obsolete WWI design designated by the French "Canon de 194 mle GPF sur Chenilles".